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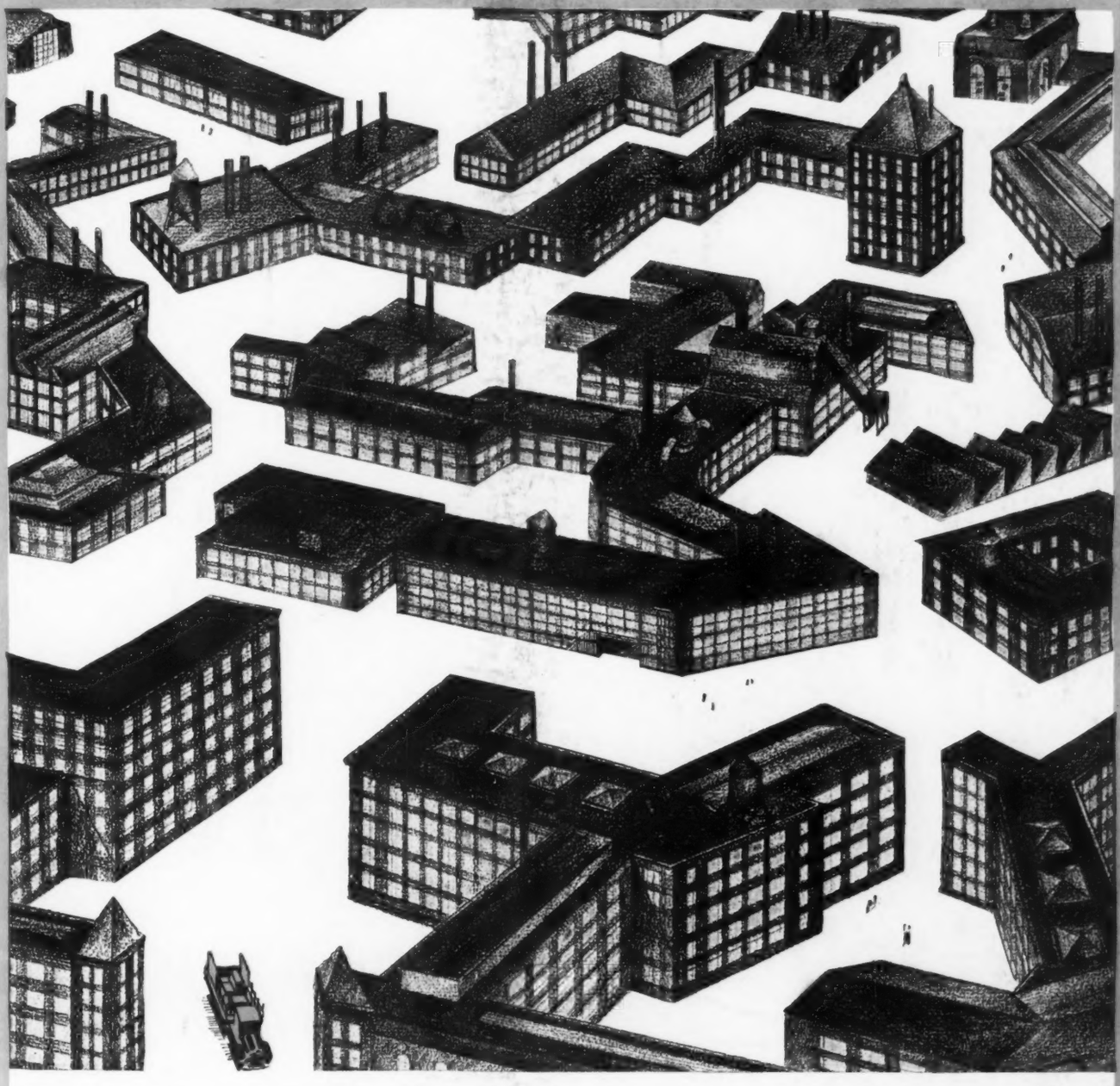

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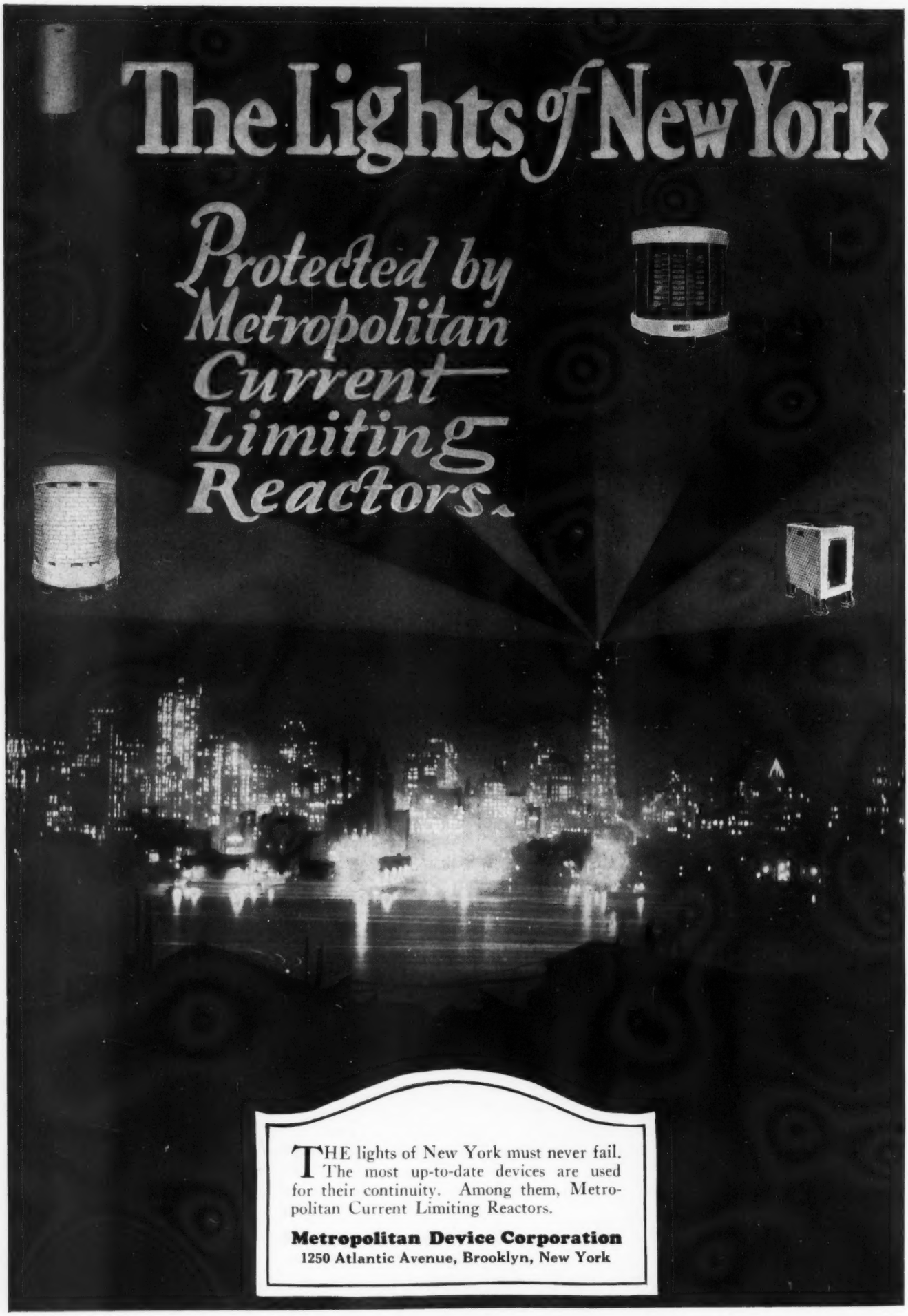
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Electrical World

A consolidation of Electrical World, Electrical Engineer and American Electrician

L. W. W. MORROW, *Editor*

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Electrical World

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L. W. W. MORROW, *Editor*

Volume 94 *New York, Saturday, July 20, 1929* Number 3

The Giver of the Light

ONLY men and women well past middle age can appreciate what Edison has done for the world. Younger folk have heard the tales of those old days. They have not seen and do not understand the actual difference made in daily living. They may have read by the light of coal-oil lamps on some vacation back to nature, but still they do not know what it once cost in comfort when each household struggled with them daily. They may have seen unlighted streets, but still they never knew a night when every road was pitch-black, when he who stepped outdoors carried a lantern and the traveler depended on the judgment of his horse to pick the way. Nor do they sense how life has been reorganized around the modern power house that has become the pulsing heart of each community, with its great nerve system of branching wires.

WE CELEBRATE this year the golden jubilee of electric light to honor Thomas Alva Edison. We must not fail to make it clear to all, however, that Edison did much more than just create the incandescent lamp. The successful lighting of the lamp itself was but a laboratory experiment. True, had Mr. Edison done that alone his name would still be written high with the immortals. But it was the very nature of the man to measure his achievement by the practical test of service. What good is light, he asked himself, unless men use it? And so to make the lamp a common benefit, he set himself the task of creating an entire system for transmitting electricity. He fashioned switches, fuses, sockets, cleats and step by step showed men the way to use what he had given them. Think of the eagerness of his imagination, the persistence of his industry, the boldness of his confidence, that he could struggle on unendingly along this visionary and uncharted pathway, patiently devising one by one these small untried contrivances to hold the wires apart and make and break the circuit of the mysterious light-giving energy with which he played.

HENRY FORD, the friend of Edison and the inspiration of the nation-wide tribute to our grand old man of electricity, happily interprets the spirit of his greatness. Edison, he says, is the world's exponent of the heroism of hard work. The demigods of history, he points out, were for the most part men of war, heroic leaders in embattled struggles for defense or power. The wages of service to their leadership were paid in suffering. The product was destruction. How much greater is the inspiration of Edison's career as it, too, stirs the hearts of youth! For here we have a hero battling with darkness and conquering with light for all humanity. And that has been Edison's way. In each of his major contributions to the progress of our civilization he has created from the realms of the unknown some new, good gift for men and women that has added to the sum of human happiness.

NO HERO has ever received a vaster expression of homage than springs from this celebration of "Light's Golden Jubilee." And in every heart and mind light stands for Edison and Edison for light. For men do not bedeck their cities and declare a holiday to glorify a thing of glass and metal. Such enthusiasm is not stirred by minerals. Joy, pride, affection, reverence—these are emotions that are kindled only in the flow of spirit between human hearts. And so in every city in the land this year where light will be enthroned for this great anniversary Thomas Edison will be exalted. For in the hearts of all humanity he is enthroned already as the Giver of the Light.

The Basis of "Light's Golden Jubilee"

WHILE we in America are busily engaged in planning local celebrations of "Light's Golden Jubilee" in high honor of Thomas A. Edison, some of our esteemed friends overseas, particularly in England, show a difference of opinion as to the individual to whom should be credited the invention of the incandescent electric lamp. To some there appears proof positive that to Sir Joseph Swan belongs the credit, and the evidence submitted rests upon the claim of early investigation and patent priority. Perhaps it would be unfair to exclaim with Robert Walpole, "Anything but history, for history must be false"; but facts are indeed difficult to determine even when today's events are concerned, and the happenings of fifty years ago become colored, as any psychologist will didactically indicate, with wholly impossible illusions.

The hero of the romance of the electric light and power industry, the man who worked indefatigably to produce the incandescent lamp at Menlo Park, the guiding spirit of the old Pearl Street station, and the one to whom we are directly indebted for most of the gifts of light and power which very largely make modern life what it is, remains Thomas Alva Edison, regardless of musty tomes and despite the achievements of other honored pioneers. Every great development has been approached through parallel struggles and cumulative efforts. The paternity of the automobile will ever remain in dispute. The airplane and the credit for the knowledge involved in its first successful flight may always be a fertile field for contentious discussion. Inventions are seldom heaven-sent inspirations from the blue, independent of past or present.

We honor Thomas A. Edison for the comforts, luxuries, fuller lives and breath-taking stimulus of unprecedented developments for which he has been responsible. We yield to none in the desire to place credit where it is due. Too many things become "as unremembered as old rain," and the celebration which is being planned in the United States is a recognition and thankful gesture to the man who has led the rebuilding of a world in the short span of two score years and ten.

* * * *

Light—to Make the World Beautiful

WE ARE beyond the fixture, lamp and wiring-device period of lighting. There is something more to the art than an attempt to get the right amount of light in the right place at a reasonable cost for utilitarian purposes. To illumination have been added architectural, decorative and artistic conceptions which have opened new vistas of beauty for the delight of the world.

Impetus to this thought will be given by "Light's Golden Jubilee" celebrations. Every nook and corner of the land will apply light as a spectacle, as a decoration, as an expression of public appreciation to Mr. Edison and as a thing of beauty. From these attempts will come practical suggestions and, better yet, a realization that the art is capable of infinite improvement from the esthetic and architectural point of view.

In attempts to find jubilee suggestions the field has been surveyed carefully. The result is floodlighting, outline lighting, searchlights, appliqué lighting, street arches, fountain lighting, jewel lighting, park lighting, street lighting and some color lighting. The fixtures are the searchlamp, the incandescent lamp, the floodlamp, the neon tube and the miniature lamps. All these things have their place, but they are embryonic only and are merely indicative of future developments.

Beyond all else there must be recognition by architects of the decorative and beauty values in lighting. Good lighting is built as part of the architectural design of a building, and the art will never be satisfactory so long as lighting is an appurtenance stuck on and in a structure after it is completed. It should be as natural for an architect to visualize his structure at night as by day, and he has infinitely more possibilities for the night scene, because he can use shades, shadows, color and transparency effects and can get away from the flat daylight tone. An attractive vista opens for exterior and interior lighting—by use of small and large transparency panels and scrolls, appliqué effects, jewel arrangements, color outlines, and so on. The incandescent lamp has its neon and other gas lights as associates in these fields. How much better it would be to think of a composite architectural assembly of beauty along our city streets at night instead of the present superabundance of glaring and startling signs! May the day come when this country shall look back upon the year of Light's Golden Jubilee as the period when beautiful light joined hands with useful light!

* * * *

The Meaning of Thomas Edison

GREATEST among the achievements of Thomas Alva Edison is that he has made his name the symbol of service—service in terms of the newest form of energy yet wrested from the unknown. The various immediate results of his inventions and researches are subsidiary to the greater accomplishment which is the total of them.

Mr. Edison's life is a brilliant example of the great truth that it is more blessed to give than to receive. No man can count or estimate what Edison has given to the world. Compared with it the things the world has given him are pitifully small. They are small not because the world would not give more, but because it cannot. The extent of Mr. Edison's or of any other man's capacity to receive reward and recognition is limited; but there seems to be no restriction on what he or any man gifted with like genius can give, and men of smaller talent can emulate them to the degree of their powers. It is possible to regard Edison as, not a man, but a phenomenon of nature—a gift to humanity from God. But this is too easy, for we thus set him apart from ourselves and lose the spur of comparison which drives us to greater utilization of our own capacities.

Henry Ford has a noble conception of Edison. It is that he is a constant and enduring inspiration for the youth of the world. The intensity with which Ford holds this conception is demonstrated by the elaborate and sedulous care with which Edison's Menlo Park and Fort Myers laboratories and workshops have been reconstructed as a part of the museum project at Dearborn, Mich. Although Mr. Ford has been amazingly successful in bringing together again and restoring these material things, it is more than he can do alone to bring back the aura of the bright-eyed dreamer in which Mr. Edison moved and which must have been strongly felt by those privileged to work or otherwise

come into contact with him. Within the walls of these laboratories and shops, as nowhere else on earth, were intelligence swift to wait on inspiration and hard work to serve the two. Here time assumed its true relativity long before Einstein thought to upset the Newtonian philosophy, for here time was measured in accomplishment, not in hours or days or even years. Mr. Ford cannot put Edison's spirit back into these reconstructed buildings. That remains to be done by reverent Youth, which will come here in search of it. The searcher will find it, for he will have brought it with him. Departing, he will carry it away and also he will leave it when he goes. Thus the genius of the master will be restored to its familiar haunts, there to abide.

It is good in this world, where the things of the immediate past usually get short shrift of care, that for the perpetuation of the environment of Edison's most active period such a capable Mæcenas as Ford has been found. As the years succeed one another the collection of Edisonia at Dearborn will assume greater and greater significance. The service his name typifies will grow stupendously, and as it grows the things, the objects, he moved among and touched will increasingly inspire to emulation of his achievement.

* * * *

Ford Has the Vision

HENRY FORD typifies modern business. His career has been built on vision and courage, and when he speaks of business affairs his words should receive the consideration due to a successful business man with big business vision.

In this issue of the ELECTRICAL WORLD is a remarkable interview with Mr. Ford. Summaries released for advance publication caused nation-wide comment and show a courage in expression and a vision in conception that electrical men can study to advantage. Mr. Ford says that "Light's Golden Jubilee" celebrations should not be taken as glorifying what has been done in the past fifty years, but as indicating what will be done in the next ten years. He thinks there will be an advance in that period as great as that made in the past fifty years, because ideas now become realities much more rapidly than in the past.

In his opinion, the electrical age is here and the job is to extend it as rapidly as possible. "We know how. Let us do it." And the Ford method of doing it is the mass-production method of a modern business man. He would weld into one operating and business unit a national power system without any fears about the "power trust," "profits"' or other bugbears of the timid mind. He scoffs at petty criticisms as to profits and unity in control because he is big enough to get the economic picture of a national power supply that would fulfill its destiny as the bearer of mankind's burdens. The real profit is what the country gets.

Added to the business organization would be a selling program to get electricity into the minds of the people. Mr. Ford says: "Get electricity across to the people in the same way automobiles have been put across to them. Create a desire for what e'ectricity will do for them. . . . We must provide power so lavishly that it will be cheaper to use it than not. . . . Give more electricity for less and less money and teach people how these greater quantities of power can be used profitably and with benefit in every direction." This is the selling program of Henry Ford.

We need Henry Ford ideas in the electrical industry. His vision and conception are on a scale and cover a scope every electrical man needs to do his job better. We are dealing with a business so big and with a future so great that it cannot be seen entire by any man.

To fulfill its destiny this industry needs men with big and courageous thoughts, and the world's greatest exponent of mass production and volume selling has stated some principles well worth pondering over, whether they are accepted *in toto* or not. The Ford kind of thinking is needed to enable the industry to realize its obligations and its possibilities.

* * * *

The Spirit of "Light's Golden Jubilee"

IT IS to Thomas A. Edison that we attribute the happy advent of electric light and power for home, office, shop, industrial and transportation needs. In him the world sees a famous inventor, an illustrious citizen and, above all, a great benefactor to humanity. He personifies the spirit of electrical men and the elements of electric service.

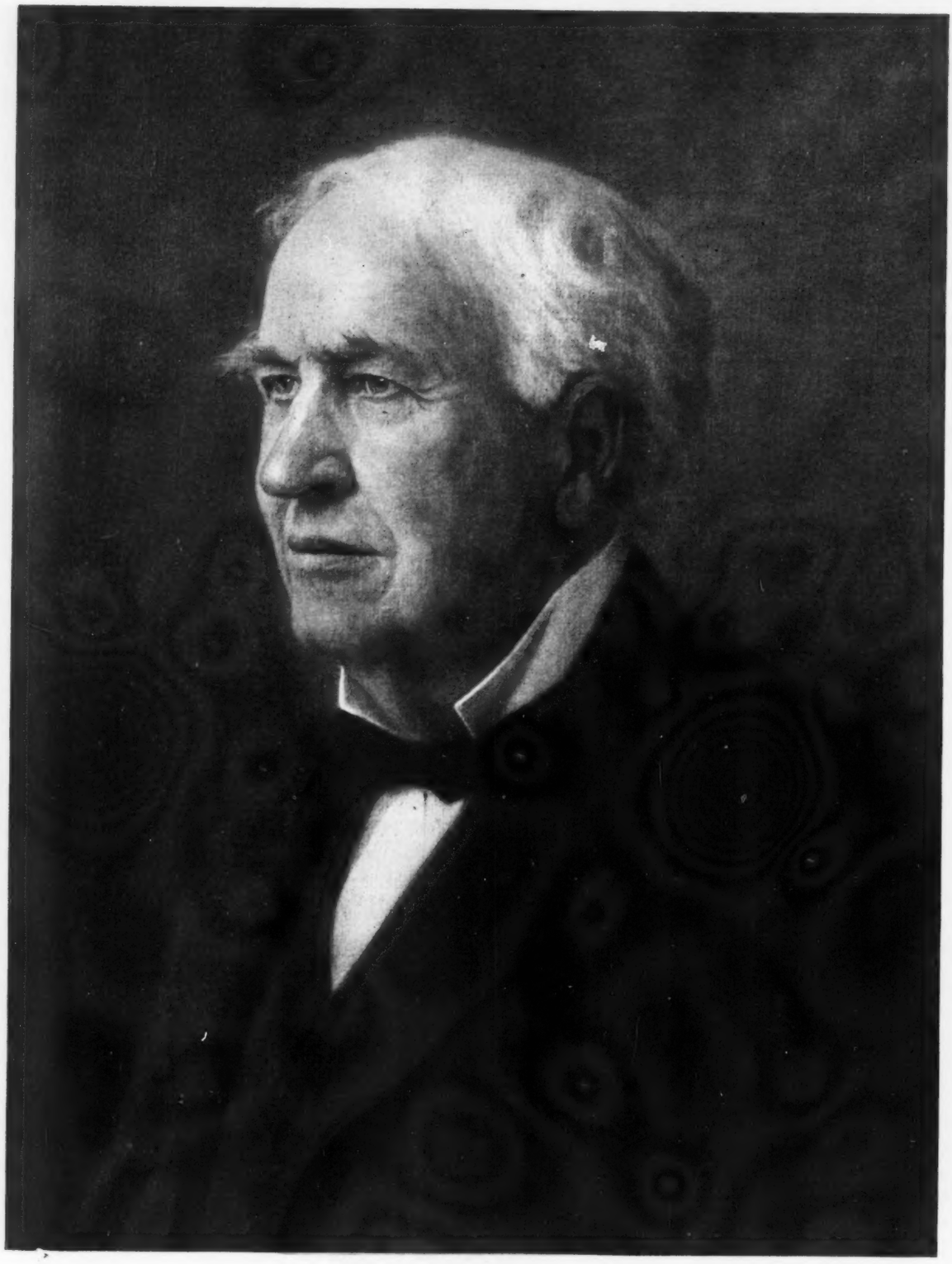
The electric light that routs the forces of darkness is the symbol of Edison and of the ideals of the electrical industry. It is fitting, therefore, that the semi-centennial of the incandescent electric light should be expressed in "Light's Golden Jubilee" celebrations in honor of the inventor. This is the spirit and purpose of the world-wide tributes, and the articles published in this issue of the ELECTRICAL WORLD were prepared with this end in view. They are practical and helpful suggestions for honoring Mr. Edison, chiefly through the use of the electric light.

And in each community the germ of the celebration must be nurtured by the electrical groups. Once started, the movement will gain impetus and will draw to it all the civic elements. Moreover, a little consideration will show that in this connection the electrical interests in each city must be more or less self-starting. No one can tell them how to organize, what to do, how to raise money, how to celebrate and the other practical things involved in Light's Golden Jubilee. The suggestions and ideas in this issue of the ELECTRICAL WORLD, in the "plan book" and in other suggestions distributed from the headquarters of the national committee must be weighed and applied in terms of local conditions. The important point to remember is that a very simple tribute or celebration may be just as effective to express the spirit of the occasion as an elaborate and expensive program. The spirit of Light's Golden Jubilee has for background a spontaneous and sincere appreciation of Thomas A. Edison.

By inventing the electric lamp Mr. Edison did vastly more than provide a new lamp. He removed an untold burden of toil from the backs of men and women for all time.

HERBERT HOOVER
Honorary Chairman Sponsoring Committee of the Edison Pioneers.

[A statement issued by President Hoover on July 20 at the solicitation of ELECTRICAL WORLD.]



THOMAS A. EDISON

The Man Light's Golden Jubilee Honors

How to Organize Jubilee

In Small Towns

The local utility is the logical leader in launching the movement, but should keep itself well in the background

WHOLEHEARTED participation in "Light's Golden Jubilee" by virtually every community in the land—from the largest metropolis down to the smallest hamlet—before midnight of October 21 is assured.

Off to a flying start early in June with Atlantic City's history-making festival of light and accelerated by Niagara Fall's light bespangled pageant, the jubilee has gathered a momentum away beyond the fondest expectations of its sponsors.

New York, Chicago, Detroit, Cleveland, Frisco—all the large centers are organizing in order to appropriately robe themselves in golden light and to join with the rest of the world in paying to Thomas Alva Edison the greatest tribute ever paid a living man.

If anything akin to a cloud looms anywhere along the jubilee's brilliant horizon, it is the slight haze that hangs over the relatively small communities that dot the nation. Not that the smaller centers need to be urged to participate in the celebration. For, over the air, by hearsay, and through the printed word the widely heralded jubilee and the early festivals of light have already fired the imagination and stirred the municipal pride of the citizenry everywhere.

Eager as the smaller centers may be to in some way take part in the world-wide celebration, not a few appear to be somewhat at sea at the present moment on the best way to launch the local movement.

But how to get the ball a-rolling? How to start? How to organize? That seems to be the only obstacle between the average small town and a successful golden anniversary celebration.

Here, happily, is where the local central station logically enters the picture, not as dictator, to be sure, not as sponsor of the Light's Golden Jubilee in its own town, but rather as an invisible self-starter, yet as a visible participant in a movement infinitely bigger than itself. Or, if you will let us think of the particular public utility in this instance as a tactful sower of jubilee seeds, planting them here and there in judiciously chosen minds where they will sprout at once and grow into a magnificent and fruitful celebration.

Two avenues of approach are open to the local light and power company—one, a right way; the other, a wrong way.

Let us first dispose of the improper kind of approach Suppose a utility were to essay the promotion of a golden jubilee of light in the home town, appointing itself as sponsor. Despite its best intentions, the move would tend to invite harmful criticism. It is not difficult to imagine a native son mounting the rostrum to thunder that "the proposed celebration appears to be little more than the central station's own birthday party —is it not engaged in the sale of light and power?— to be 'thrown,' so to speak, by the citizenry at large." Obviously a movement, so launched, would undoubtedly capsize before it could get under way.

An entirely different avenue of approach, therefore, is recommended. First, as far as the average small town and city is concerned, it seems advisable that the local central station, although it takes the lead in initiating the jubilee movement, should keep itself in the background at all times. Secondly, it seems advisable that the proposed festival be of broader scope than a lighting jubilee alone—that it be a tribute to Mr. Edison. Among other matters contributing to the inadvisability of confining the celebration to the golden anniversary of light is the average small community's lack of funds for the necessary facilities that would make for a sizable lighting spectacle. In some respects the results would hardly justify the necessary expenditure.

On the other hand, picture a big, small-town pageant marking 50 years of local progress, with lighting a feature incidental to the celebration. Under such a set-up the citizenry will participate as naturally as the Broadway crowds turned out to greet Lindbergh two years ago. Although local conditions vary with every small community, organization plans, if properly guided, ought to take a step-by-step course somewhat similar to the following procedure:

STEP I

Let the proper utility executive and its leading illuminating expert sit down with the local electrical league (if there be one) and two or three of the foremost electrical merchants in the town, discuss plans and appoint a committee to represent the local electrical folk.

STEP II

Let this committee as a body approach the most influential citizen in the town. He may be the leading merchant, the mayor, president of the local chamber of commerce.

STEP III

Having won his enthusiastic support in connection with the proposed movement, the Chamber of Commerce is next approached. It is suggested that this body hold a special meeting to discuss the best ways and means of conducting the local golden jubilee. At this meeting it is decided that a sponsoring committee, consisting of representatives of the various branches of the town's activities—at least one leading merchant, representatives from the local Kiwanis, Rotary, Lions, etc., clubs, local newspapers, prominent banker, educator, a member of the local government, and a representative of the electrical fraternity—be formed.

STEP IV

Upon the acceptance of the members of the sponsoring committee it is suggested that a meeting or luncheon

be held, at which time the story of Light's Golden Jubilee and the world-wide tribute to Thomas A. Edison be told.

The appointed spokesman, having swiftly reviewed the high-spots of Light's Golden Jubilee, sponsored by the Edison Pioneers and guided by the distinguished general committee headed by the Hon. Herbert Hoover, would at the same time point out the golden opportunity that knocks at the city's portals. What an opportune time to tie in with this world-wide celebration. Why not a local pageant of progress, celebrating the progressiveness of the community, the tremendous strides, locally, in growth of business, of industry, of comforts, of health and human happiness during the last half century! For, are we not all the beneficiaries of the Age of Progress that began with Edison's discovery of light without flame, with his invention of a complete system for the transmission of burden—lifting electrical power over wide areas; that continued with his hundreds of other contributions to mankind, and which endures, thanks to the thousands of gifts to this "Age of Light" by a host of other great benefactors to the public good!

What a natural outlet for that long pent-up thing called municipal pride. What a logical occasion for stimulating trade. What a magnet with which to attract the crowds from the outlying districts. What an opportunity for the local newspapers, editorially and otherwise, and even the present political administration to build good will in connection with the coming election next autumn.

STEP V

Following the formation of an enthusiastic sponsoring committee, various subcommittees should next be appointed to handle such matters as publicity, finance, transportation, reception, contests, local organizations, pageants and parades, fairs and carnivals, fireworks, residential displays, local radio, band concerts, dances, air derbies, festooning, window displays and the like.

STEP VI

What the main event shall be depends entirely on local conditions. In Milan, Ohio, for instance the focal point will be the home where Thomas Alva Edison was born. An illuminated airplane race between that town and Cleveland in connection with the National Air Derby will probably serve as the feature event. In some other community it may be the dedication of an illuminated fountain or the opening of a new "whiteway" or an event of tremendous import to the local citizens which in no way is allied to light.

Whatever the focal point or main feature may be, it should be decided on early in the program so that all other ideas may tie in with it.

Window Displays

Practically every merchant in town has an excellent opportunity to make an attention-compelling window display that will tie-in with the jubilee. The center feature might be a picture of Thomas Edison. On one side his line of business in 1879. On the other side, the wares as sold in 1929. They could be contrasted as to style, as to color, as to price and as to quality.

Merchants, especially, who have been in business since 1879 could play up this fact in a prominent manner, pointing out how they have served the community for over 50 years. They could show photographs in their windows of their store in 1879, of their employees at that time, etc.

Replicas of Edison's first lamp will be available, from which can be made many interesting window displays, in all types of stores. Large department stores, for example, might devote two or three windows to the changing events of the past 50 years, the different costumes of 1879, of 1890, 1900, 1910, 1920 and 1929. Electric service companies, electric dealers and contractors could show in their windows the change that has taken place in lighting and in lighting fixtures and in lamps.

In the interior of the stores golden decorations and golden light could be used in many places. Interior displays depicting ideas along the same lines as shown in the window might be used.

Window Display Contest

Chambers of commerce or merchants' associations might wish to run a window display contest in connection with the celebration of Light's Golden Jubilee.

Here an incentive would be afforded to the various merchants, spurring them to make special efforts to have outstanding displays in their windows.

As in many cases before, colored light and lighting effects could be employed to enhance the beauty of their displays.

Whether the contests be essay writing, poster painting, window dressing, a special committee should be appointed to handle the details. It should not only arrange for the necessary publicity and carrying the contest through but should appoint the fairest of judges and select the prizes.

Publicity and Finance

No matter how important an event, nationally or internationally, local publicity is an absolute necessity if all of the community is to take part. There should be many opportunities for local publicity as the local work proceeds. In addition to press releases, whoever is in charge of publicity should see that the various local organizations are advised of the program and given an opportunity to tie in.

Talks may well be made by members of the committees or persons appointed by them, before the various service clubs, business men's organizations, churches, schools, etc.—the talks being varied in accordance with the audience. It is not enough to assume that while Mr. Edison is known to every man, woman and child, every one knows of this year as the occasion of paying him tribute. The story of Edison's life; his inventions and their results; his struggle for knowledge; his countless hours at ceaseless work, etc., all form the basis for interesting talks, editorials or presentations. To the youth of the country the story is one of heroism—the story of a genius who succeeded in spite of lack of schooling. To business men's organizations the story is one of the wonders that Edison's inventions have wrought and the debt that business owes to the man who has done so much for their progress.

Proper financing is of utmost importance. Before any venture is decided upon, its cost should be counted and plans laid accordingly. If the main feature is to be a pageant or parade, the various organizations and merchants of the town will undoubtedly contribute their share. If street decorations form a part of the picture, the funds for these may need to be raised—jointly by the city, the merchants, local electric interests, etc. If places of special historical interest are to be floodlighted the electrical fraternity may wish to contribute this as their part in the tribute.

In connection with such affairs as conventions, meetings, carnivals, etc., these bodies themselves may wish to enter into the spirit of the celebration and handle these events as part of their own presentation.

If each organization, whether commercial, governmental, service or educational, can have a place in the picture, each group will find means and funds to lend its aid to the great tribute.

Local Organizations

Every local organization in participating in the local jubilee will be tieing in with the nation-wide tribute to Edison and the occasion of the fiftieth anniversary of modern lighting. Take the church. Light has always been an integral part of all religious ceremonies.. Take the business clubs, the garden clubs, the local engineering societies, Boy and Girl Scouts, women's clubs, the various lodges, American Legion, and the like. Each has its own story to tell in connection with progress, the Age of Light and Edison.

The small town is even more fortunate than the big city. Organization is simplified. There is always that personal "Hey, Jim" touch.

Pageants, Parades, Fairs and Carnivals

Because of the color and atmosphere created by pageants and parades, these are two of the most effective means for centering attention.

A pageant held in the city park, the stadium or in the ball park, depicting the history of light from the early cave man days down through the ages to the invention of the incandescent lamp in 1879 and ending with light as used in 1929, would have a popular appeal.

This same series of events could be incorporated as a parade, with floats built on street cars, trucks or automobiles. Local societies, clubs, individual merchants, etc., might accept the responsibility for one or more floats and thus provide the entire series.

Where county and state fairs are held, carnivals, conventions, etc., each can make a special effort to honor, in some way, this great inventor. The fair can have special golden decorations, both at the entrance and throughout the grounds.

Special floodlighting in the fair grounds will add to the event. Some special feature, such as a tower of light or an illuminated fountain, will help attract crowds to the fair or carnival itself. One day of the fair or carnival can be set aside as Light's Golden Jubilee Day. Special prizes can be given for various events in connection with Light's Golden Jubilee. Special arches incorporating Golden Jubilee emblems can be constructed at the entrance or at various points throughout the grounds. Arches of this nature could also be constructed on the main streets or leading traffic roads coming into the town.

Street and Floodlighting

The main business section of the town or streets may be made a path of gold. This is easily done by painting the inside of the globes of the street lights with yellow lamp dip, which will retain its color for a period of two or three weeks at least. It can then be washed off with alcohol or amyl acetate and the globes put back, plain as before.

Other methods of obtaining the golden tone, such as colored glass caps, cylinders, etc., will, of course, suggest themselves.

The main streets can be decorated with strings of lamps, preferably arranged in some design of a definite pattern, rather than just looped from pole to pole. Yellow-coated lamps of the 10- or 25-watt sizes will be very effective as to the color effect produced. Some contrasting color, such as blue or green, should be used at intervals to give points of emphasis to the design.

Banners and pennants can be hung on street-lighting and trolley poles. If used in sufficient quantity, they will give the street a daytime appearance of festivity.

Special temporary floodlighting can be installed on local public buildings, such as the city hall or library, monuments, statues, etc. Golden yellow light will be very striking. This can be obtained by the use of glass caps or cover plates or by painting the cover glasses with yellow lamp dip. Contrasting colors should also be used for the shadows produced by the principal units. Office buildings, hotels, restaurants, banks, fountains, etc., all offer opportunities for spectacular floodlighting, using automatic circuit-changing dimmers to produce a mobile color effect.

Every Home in the Land

Every home lighted by electricity and depending upon electric light for much of their cheer, comfort and happiness will want to do some little thing to tie in with the celebration. This might be in the form of a golden light on the porch, a decoration in the window, perhaps a golden light in the portable lamps, or throughout the living room itself, or special golden decorations for parties, get-togethers, dances, etc.

Mr. Edison invented the phonograph, and the principles underlying all modern radio tubes. The use of the phonograph and radio could furnish part of any family's tribute to this great man.

The Airport

Many cities have airports. A night airport meet might be held some time during the week preceding the final festivities. Demonstrations of night flying and stunt flying at night, illuminated either by searchlights or the planes with their own lights turned on. Many fields are lighted for night flying with special floodlights, boundary lights, etc. These might be turned on during the whole night period of the celebration.

Colored magnesium flares attached to the wings of airplanes as they do their stunt flying are very spectacular and could be used to produce brilliant effects.

Display Material

It behooves the local sponsoring committee to avail itself of the various kinds of display material already available in connection with light's Golden Jubilee.

The various "Mazda" lamp companies are prepared to furnish replicas of Edison's first lamp, at small cost.

It is suggested that merchants display Edison's official photograph and reprints of the New York *Herald* account of "Edison's Light," along with early copies of local newspapers, in their windows.

Special jubilee match books, portfolios on floats and arches, emblem stickers, outdoor poster, speakers' material, films and much other helpful material is listed in the "Plan Book." But if a local celebration more in the nature of a festival of 50 years of progress is contemplated, perhaps posters and the like with a local flavor can be fashioned to suit the special occasion.

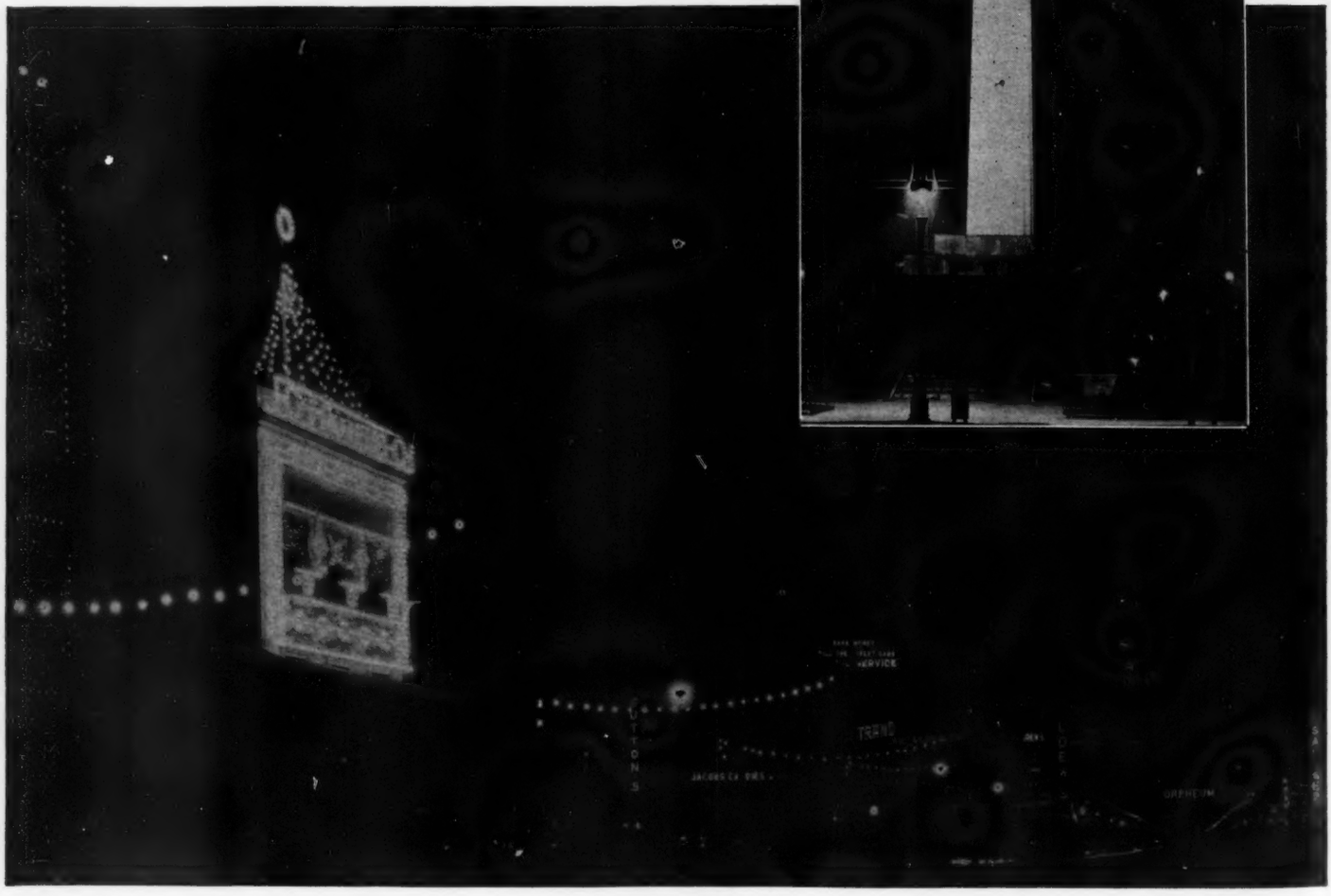
But after all, the extent to which a small town celebrates this golden jubilee year depends on its size and local conditions.

The local sponsoring committee is to use its own judgment in every case.

New Orleans

AMONG the plans of New Orleans, La., for the celebration of Light's Golden Jubilee is the floodlighting of the Robert E. Lee monument. The temporary installation, illustrated, will be improved upon by the use of twenty 50-watt projectors and four 1,000-watt units mounted on ornamental standards. Estimated cost $3,250.

City Hall, New Orleans, La., as It Appeared During a Previous Celebration. Border Lighting Is Effective



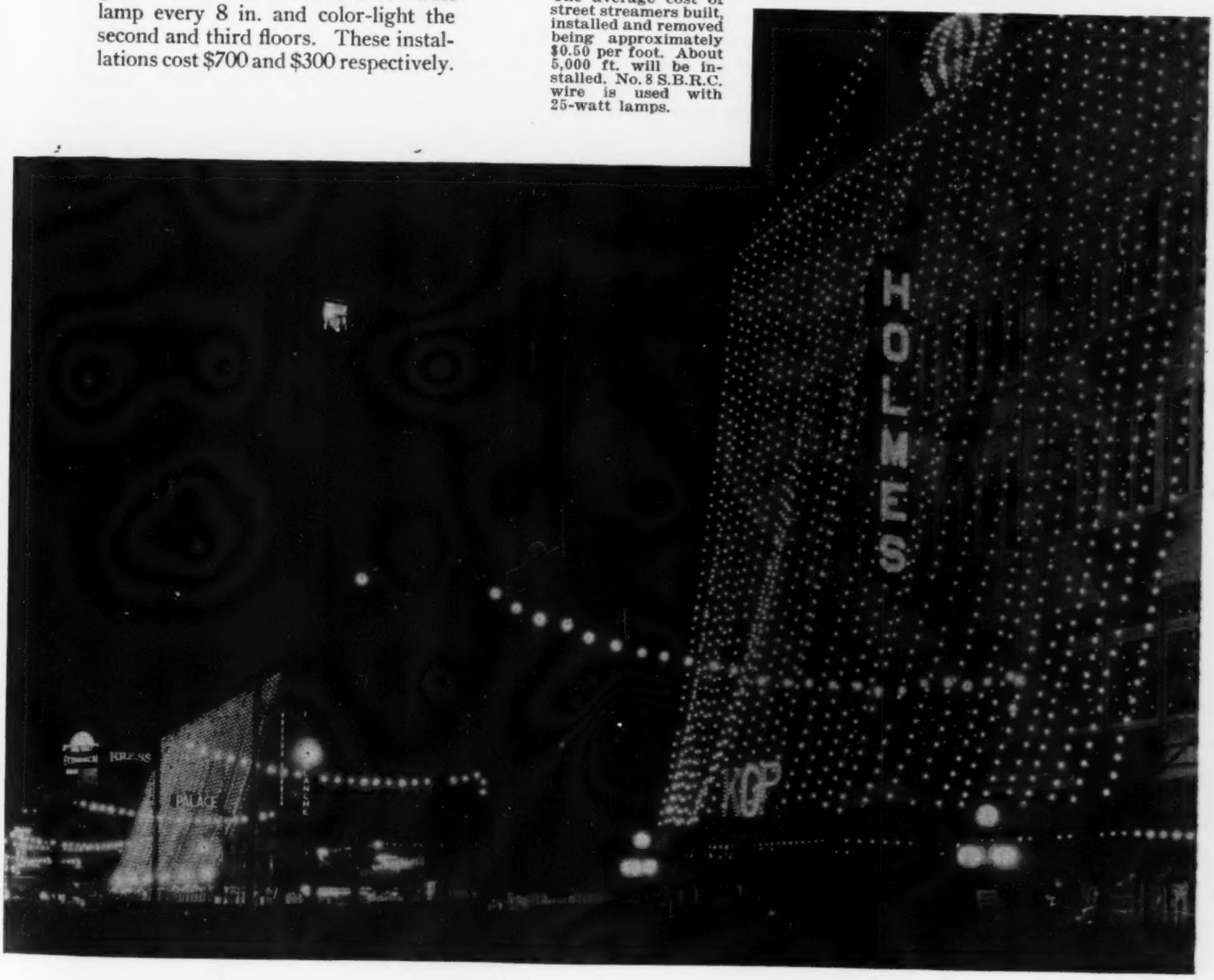
to Light Landmarks

The installation of streamers on buildings consists of spacing 25-watt lamps every 3 ft. on No. 14 S.B.R.C. wire and spacing streamers every 3 ft. The average cost is about $0.35 per foot for building, installing and removing.

New Orleans Public Service, Inc., illuminates the six upper stories of its building with nine 1,000-watt floodlights. Parabolic troughs with colored glass covers accommodate a 200-watt lamp every 8 in. and color-light the second and third floors. These installations cost $700 and $300 respectively.

Carnival Lighting Is Not Expensive

The average cost of street streamers built, installed and removed being approximately $0.50 per foot. About 5,000 ft. will be installed. No. 8 S.B.R.C. wire is used with 25-watt lamps.



HENRY FORD *Talks About*

"The Power Trust" and

"LIGHT'S GOLDEN JUBILEE is conceived and planned as a celebration of electrical progress in the last 50 years as it is typified by the improvement and universal acceptance of the incandescent lamp from its invention in 1879. But it is not that alone. I believe Mr. Edison would agree with me that the celebration should be taken, not as glorifying what has been done in the past 50 years, but as indicating what will be done in the next ten. I say ten years, because in that period we shall see an advance as great as that made in the past 50 years. The world is just getting its momentum. Ideas accomplish themselves much more rapidly than they did even 25 years ago.

"The use of electricity is yet little to what it will be in the next ten years. Power is the center of industry. It is assuming an indispensable place in agricultural and domestic life. We have not yet fully realized that the function of the workman is to direct power, not to exert it. We are closer to that realization in industry than in agriculture or in housekeeping. Having the energy of electricity to do our bidding, there is no reason for human backs to strain, for arms to lift nor legs to stagger under heavy loads."

This is the conception of Henry Ford for the celebration of Light's Golden Jubilee. He has an intense admiration for the genius of Thomas Edison. To him Edison typifies the inquiring mind and the capacity for hard work on which the structure of our modern world is founded. Through his vision of Thomas Edison as a perpetual inspiration to the youth of the world one of the most significant scenes in history will be staged again in its original setting and with the original actors. Mr. Ford has made it possible that on the night of October 21, 1929, Thomas Edison shall stand again within the walls of his Menlo Park laboratory, now erected at Dearborn and, surrounded by the actual and spiritual presence of his associates on that great occasion, shall re-enact the scene of 50 years ago when the incandescent electric lamp definitely took its place as the modern artificial illuminant. Besides, Mr. Ford has arranged to perpetuate the surroundings and impediments of the most fruitful years of the inventor's life as a major part of the great museum of Americana that is now arising at Dearborn.

Naturally, it first occurred to the interviewer that Mr. Ford might talk of Mr. Edison in a personal way, tell of his first contacts with him and speak in somewhat of a reminiscent vein. But Mr. Ford did not feel that way.

"Why should we take time for that? Any one who wants to learn about Edison's early life can go to a library and read it. The newspapers will be full of it this year. It is not the important thing here. What I want for the American people by this presentation of Edisonia at Dearborn and by the celebration next October is the realization of what Edison stands for in the progress of humanity. That should be the aim of the electric utilities also in their participation in this jubilee. There is a vision to relate, a vision of what electricity can and will do for the people of the United States and of all the world."

Asked when he thought that happy consummation of electricity's golden age would be in our midst, Mr. Ford was emphatic: "The electrical age is here. We are in it now. The technique of electric power production, distribution and utilization is the accomplishment of the past 50 years. For all practical purposes that job is done. There may be improvements in this technique some time in the future. But the necessary tools are forged and ready, and what we have to do is to use them in order to bring about the immense social and economic benefits of electricity that are now clearly apparent to us. Thanks to Edison and his fellows in invention and discovery, we are equipped to do the physical job in an adequate manner. Thanks to Coffin, Insull and their peers, we are ready to handle the business end satisfactorily. The electrical age is not in the future; it is here and now. We have only to extend its benefits as rapidly as we can. We know how. Let us do it.

"Today, as the result of only five or ten years of expansion of electric systems, we see the land fairly well covered with transmission lines. We see some tentative tie-ins between industrial plants and central stations for power interchange. But these interconnections between central station and industrial systems are only a start on what is to be done. The whole country will be interlaced with lines as the area of a single system is today.

An Interview by FRANK R. INNES,
Western Editor ELECTRICAL WORLD

Light's Golden Jubilee

There will be mutual co-ordination of energy demands and generation capacities between utilities and industrials so that the peaks and valleys of the load curves of the utilities may be smoothed out and economic use be made of by-product power from industrials. This ideal means unification of utility systems in business terms as well as electrical.

"People talk about a 'power trust.' I only wish that there actually were a 'power trust,' a central directing organization for the development and use of every power source in the country, tied into one national power system for the service of the whole country; that is, welded into one operating and business unit. It has got to come as the one necessary and economic method of power production. Our national power system will become a unit, just as our postal system is. This would mightily speed the day when electric power would fulfill its destiny as the bearer of mankind's burdens.

"It is of no importance except to those who use it as political capital that in the growth of power development this man or that man or any group of men should make much or little money. Profits are merely what we think we work for. They are of small account in comparison with what we do to get them. The real profit is not what the promoters get, but what the country gets. Men may work for money or to gratify a sense of power, but their work lives after them and belongs to the nation. The essential thing is to spread available electrical power far beyond present limits of extent and capacity. To do that we must enlarge our conception of its use so that the power that comes over the wire (or through the ether, when radio transmission becomes practicable) may be as common as air and as universally used.

"Certainly men will make money out of the supply of electricity, as they always have and always will out of any commodity or service, so long as human nature is so constituted as to expect or to hope for a reward for effort. But what difference does that make? The main thing is that the country is put in possession of its own resources. Politicians can hinder this development; you never heard of a politician developing any natural resource, did you? Trying to stop people from making money is shortsighted policy if they are doing something that will remain as a permanent increase of national wealth. Money cannot be held idle, for then it loses its value. Its only use and worth come from it passing on to others for work done or goods received. The critics of the electric utility industry have made too much talk on this phase of the situation. The money that has been taken out of the business in the form of profits from the sale of electricity or from the manipulation of company ownerships has gone back into this industry or into another one, and is nothing when compared with the profits which the public has been able to make through electric light and power.

"As a matter of fact, look over the record of prices of electricity to the consumer since the industry began and you will see that they have gone down continuously, and they will keep on going down as more and more electricity is used."

"But," objected the interviewer, "all of us who are in the electric business or who are associated with it in any way know all about that and we have tried very hard to tell it to the world. But the world apparently does not want to listen nor to believe us if it does listen." Mr. Ford was quizzical: "You know, there are two ways of telling—with words and with acts. The biggest job before the utilities of the United States is to get electricity into the minds of the people. The people always see when they are shown.

"Get electricity across to the people by the same way that automobiles have been got across to them. Create a desire for what electricity will do for them. They do not ask to understand the technology of electricity nor even the business phase of the industry. They need only be shown how tremendously much more electricity can do for them if they will only let it. This does not mean propaganda of what electric companies have done and can do; you are not selling companies, you are selling electricity for what it can ***do*** *in home, shops, on the highway or on the farm. The appreciation of which I speak must be implanted by* ***doing,*** *by supplying the power and letting it work. Corraling the sources of power and doling it out is not the way; we must provide power so lavishly that it will be cheaper to use it than not. It is to be done by giving more and more electricity for less and less money and by teaching how these greater quantities can be used profitably and with benefit in every direction.*

"This, then, is my idea of the meaning and opportunity of Light's Golden Jubilee to the electric utilities—by celebrating the past, to open up a vista of the future. What has gone before is merely a preparation for what is to come. From executives down, every man, woman and child in the electric business should have this thought firmly in mind, that he or she has a part in working out a vision so vast that no man can see it entire. As Mr. Edison has said, it is beyond our comprehension, just as the present development was beyond the comprehension of his early days."

Have You Seen Your Garden?

By A. L. POWELL
Edison Lamp Works, Harrison, N. J.

MUCH of the pleasure of those who live in the suburbs comes from the enjoyment of the landscape gardening and the flower beds that are possible in such communities. To the average commuter much of this is lost in the night hours that might otherwise be made beautiful through simple forms of illumination.

These may take the form of lighting the streams or brooks running through estates and the floodlighting of trees and foliage around the houses, or the rose bowers. For festive occasions or parties, gardens may further be decorated by the use of strings of lights or lamps inserted in toy balloons, as shown in one of the views.

With but little effort and expense the suburbanite may not only celebrate Light's Golden Jubilee in this manner but may enhance his enjoyment of his suburban home.

Rose Arbor Illuminated by Two 250-Watt Projectors

Garden of Hotel Broadmoor, Colorado Springs, Decorated for Night Life

A Single Wide-Angle 500-Watt Flood Gives Life to This Garden Brook

What the Large City *Can Do*

METROPOLITAN ORGANIZATION outlined to formulate plans and to make them effective. These are necessary steps to obtain the co-operation of all civic entities in the celebration of

Light's Golden Jubilee

OBVIOUSLY the jubilee, to be well executed, must be well organized. Whether the community is large or small, the organization should be all-embrasive.

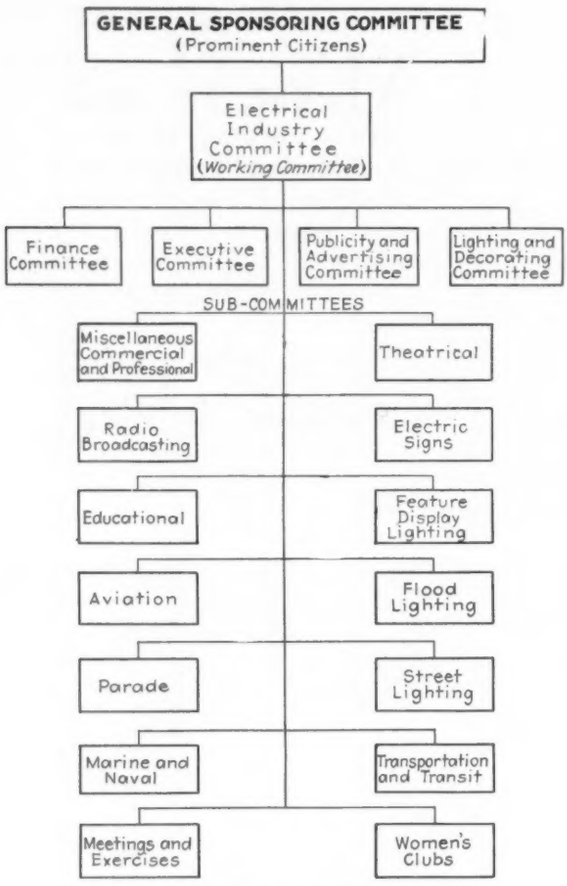
One metropolitan plan calls for a general public or sponsoring committee to be headed by an outstanding leader and to include the officers and organizations of the civic associations, the city departments, the educational organizations and other independent prominent citizens. Special attention is given to the electrical industry committee, which includes the subsidiary lighting companies, the manufacturers, jobbers, contractors, dealers, architects, engineers and electrical associations identified with the city. In addition to this there is an advisory committee, a finance committee, one for plans and arrangements, lighting and decorations, and publicity and advertising.

The preliminary plans that have been carefully drawn up list all of the organizations that should be interested in this celebration. Beginning with the city government, the army, the navy, the National Guard, the list extends through the civic and commercial associations, the electrical organizations and associations, the subsidiary lighting companies in the district, the commercial and professional interests and the educational interests.

The suggested plans and features are of special interest, as many of these can be adapted to the needs of other cities. It would be expected that the larger metro-

What One Large City Plans to Do

1. Local program to be inaugurated during a regular scheduled meeting of electrical specialists early in October and to culminate on the week-end of October 19 to 21.
2. Giant incandescent lamp to be erected in the public square, either a replica of the original or a modern lamp.
3. Electrical league luncheon at prominent hotel about middle of October, with Edison Pioneers or associates as honored guests. At this luncheon the huge lamp will be dedicated.
4. Parade on Saturday and Monday nights with floats on street railway flat cars to go all over city.
5. Development of jubilee ideas at the popular resorts during the summer months.
6. Public utility president to congratulate Mr. Edison via radio on the evening of October 21.
7. The public library and other public buildings to be floodlighted with slowly moving waves of color.
8. Gas-filled large balloons in the shape of electric light bulbs to be released from several points about the city during the evening of October 21, and illuminated by searchlights as they float skyward.
9. The foliage in parks to be floodlighted with a decorative scheme to be developed.
10. Talking films of Edison and the company films to be displayed at local theaters and meetings for several weeks preceding October 21.
11. Electric signs on airplane wings flying over the city at night. Sky-writing during the day.
12. Museums, schools and libraries to exhibit "Edisonia" and distribute literature or souvenirs.
13. Distribution of souvenirs from airplanes.
14. Signs on the company's buildings to be changed to the amber colored bulbs with addition of special signs and special messages.
15. Special stage presentations of plans for the Festival of Light at prominent moving picture theaters.
16. A marine demonstration, combining displays on navy boats, local yachts, bridges and pierheads.
17. Sightseeing trips through the company's generating stations.
18. Plan for store window displays to compete for prizes to be set up.
19. Special Light's Golden Jubilee inserts to be sent with the company's bills.
20. Billboard and car card advertising.
21. Distribution of souvenirs to associations and organizations to be used at meetings, dinners, luncheons, etc. These to be models of the original lamp in glass, wood, or in cardboard cut-outs.



Suggested Organization for the Metropolitan Center

politan centers would develop extensive programs because of their size, but the specific information submitted is of the type that may readily serve as suggestions to any other city.

The preliminary plans have detailed the exact streets that are to be lighted by festooning, the parks that are to be illuminated with special decorative features, the waterfront and bridge lighting plans, and suggestions for store lighting to be used generally. Prominent buildings have been segregated for the consideration of flood-lighting, classified as utility buildings, general commercial office buildings, public buildings, monuments, etc. Plans are also laid out for searchlights and beacons to be installed, special electric signs and giant projectors erected on prominent buildings.

All of the officers, directors and personnel of the organized groups that are expected to participate in this celebration and act on various committees are listed so that those in charge of the development of these plans have this information readily available. In an accompanying illustration the suggested organization is shown in chart form.

Pacific Coast Enters Spirit of Jubilee

WHILE plans for participation in Light's Golden Jubilee celebration have not definitely been formulated, each community on the Pacific coast is entering into the spirit of the occasion and will take its place along with the rest of the nation in commemorating the fiftieth anniversary of the invention of the incandescent lamp.

In some cities special committees have been formed, while in others the movement will be sponsored by electrical co-operative leagues or local electric clubs. Portland proposes the formation of a general committee, composed of the Mayor, president of the Chamber of Commerce and other prominent people to act as a sponsoring committee, and the newly organized Portland Electric Club will likely take over the major portion of the work.

An impressive local demonstration is planned for Spokane, with attention focused on Spokane's position on the official lighted airways. Through various local channels Salt Lake will recommend extensive improvements in illumination standards and make suggestions for appropriate lighting in connection with Light's Golden Jubilee week. During that week some novel lighting effects are planned and meetings with electrical, industrial and social groups will be held.

Present indications are that Denver will make the celebration a civic affair, with the electrical industry aiding in working out plans. Some consideration has been given to an illuminated pageant. A committee has been formed in Seattle, but no definite plans have been made.

In California activity will consist principally of participation of the individual power companies. The Pacific Gas & Electric Company will issue a beautiful book, prepared at a cost of several thousand dollars, treating of the history and development of artificial lighting and will dedicate this book to Thomas A. Edison and Light's Golden Jubilee celebration. Other utilities throughout the state plan special lighting effects and participation along the lines suggested by the national committee.

Dimmer Control for Colored Floodlighting

IN THE floodlighting of the Northern Life Tower, recently completed in Seattle, a feature of particular interest involves arrangements made for alternately bathing the tower in white and colored light. On the fourteenth story level two terra cotta baskets between each pillar, each containing two 300-watt floodlights, provide a band of low-intensity white light. This band of white light is dimmer controlled, so that it is not on when the colored lighting above begins. The first bank of colored lights occur on the nineteenth floor. Four 1,000-watt floodlights are installed in offsets provided for them between each pier on this level. Two of these contain 1,000-watt lamps with clear lenses and two contain 1,500-watt lamps with color lenses. At the present time this level is colored red. These units light four stories.

On the 23rd floor level another setback was arranged and is provided with the same lighting arrangement for lighting between the piers for the next three stories. At present each alternate unit has a green lens. An observation walk has been provided for the top of the building and a considerable setback occurs here, permitting the installation of thirty-two 500-watt floodlights with clear lenses. These furnish a band of white light which forms a crown for the building.

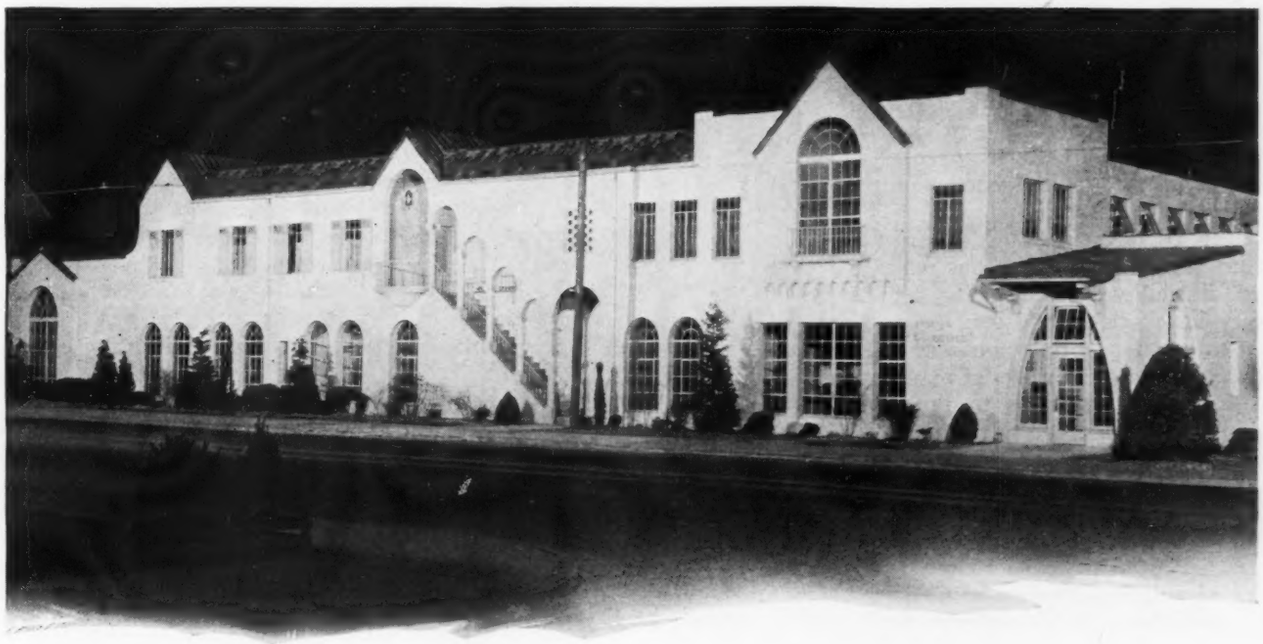
Dimmers are connected with the white circuit and by dimming the white light the colored light appears. Then the white light slowly obliterates the colored light and the building is changed from color to the white.

It is interesting to note that motion color lighting seems to meet every artistic requirement in building floodlighting. Color is provided in pastel shades for those who like color, and fully saturated color at one phase of the dimmer and all white lighting at another. The soft light used as a base, increasing in intensity on a white phase of the dimmer to where the topmost section of the building is extremely bright, has been pronounced by architects as a forward step in the floodlight art.

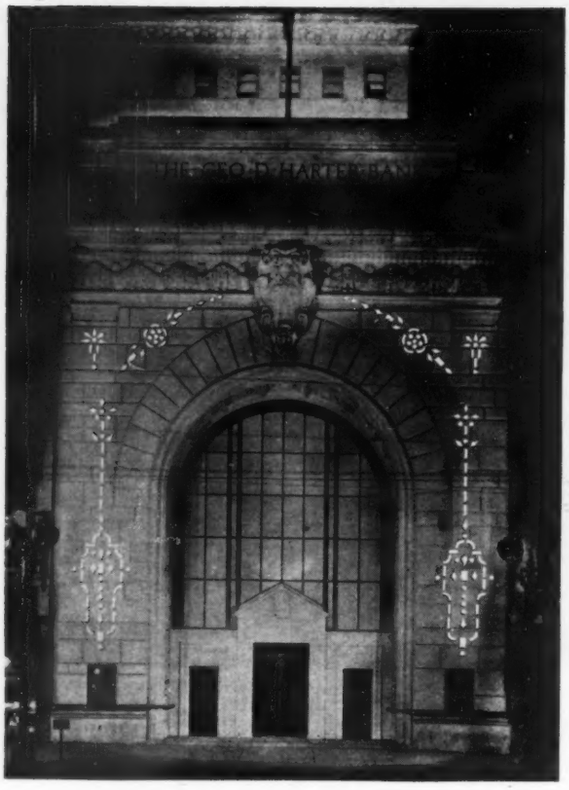
The complete floodlighting installation consists of 48-FLC, 1,000 Pittsburgh floodlights with clear lenses; 64-FLC, 1,000 floodlights with color lenses and 1,500-watt lamps; 8-FLC, 1,000 floodlights with spread lenses; 32-FLC, 500 and 54-FL, 300 floodlights. Dimmers are of the Cutler-Hammer reactance type. The total connected load is 170.2 kw.

Commercial Building Made Attractive at Night

AN UNUSUALLY beautiful floodlighting installation at Everett, Wash., is pointed to by Stone & Webster, Inc., as an example of how a commercial building of attractive architecture may be externally illuminated for regular service or special periods of celebration. The installation required four floodlights of 4 kw. total wattage. The floodlights cost $208 and the wiring and installation $60.36. Any non-metallic sheathed cable can be used for temporary service. Colored lenses can be used for special effects.



Appliqué Festival

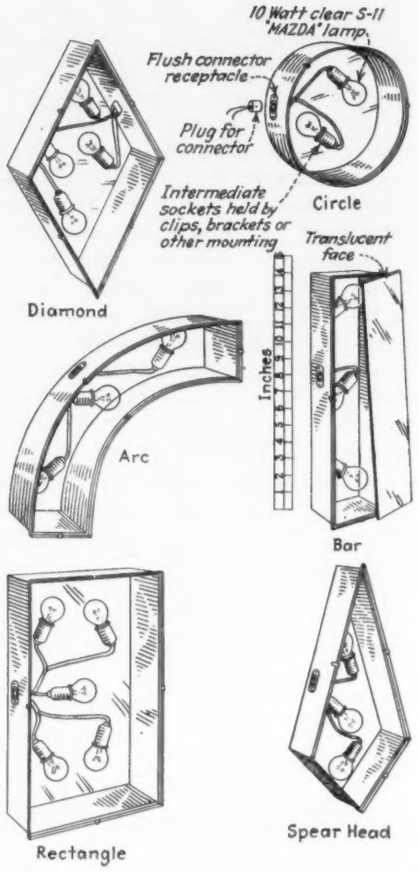


A Dignified Decoration

There are 34 green, 46 red, 12 blue and 70 yellow units involved, a total of 162. The wattage is 4,650 and probably erected cost about $1,500. None of the costs involves the salvage, as the units themselves are serviceable for many applications.

Standard Types of Applique Units

List prices range between $4 and $8 per unit complete. Quantity production and trade discounts will reduce these prices materially. Over-all costs of recent applications indicate $6.50 to $7 per unit completely installed.

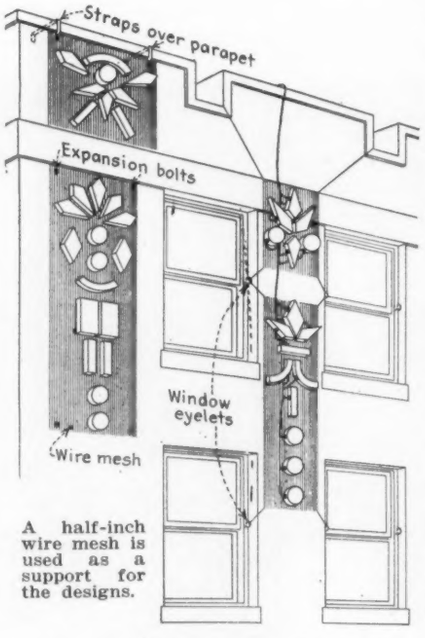


IN ORNAMENTAL lighting there is always a need for variety. To maintain the appeal of such installations and to increase their number there must ever be new pictures in light and color. And so, in this year of light festivals, a fascinating new method of light decoration becomes available. It extends the field for decorative lighting to structures for which floodlighting has not been deemed appropriate or feasible, or for which the effect of conventional festooning is not desired. Exposed lamp patterns may be built up in forms of great variety and interest, but because of the irradiation of the lamps, tending to cause the patterns to blur, they are especially adapted to decorations of large scale. With the softer glow of the new light ornaments, the patterns remain distinct, colorful and attractive for a considerable distance.

Other characteristics of the new medium are attractive. It has maximum flexibility desirable for temporary installations, and may be applied to any type of structure or institution. The same material may be used on other occasions to present entirely different decorative patterns. Moderate wattage is required so available circuits can be utilized without going to expensive wiring.

While the system was intended to be particularly adaptable to the exterior of buildings, it may be used to build up independent structures, and it also has a place in the decoration of larger interiors.

Some leading electrical sign manufacturers are carrying out the suggestion that this new medium be developed as a simple unit system consisting of a few standard forms or shapes. So far the Federal Electric Company of Chicago and the Flexlume Corporation of Buffalo have announced lines of this product. Given units of five or six shapes and with a range of four or five colors in the translucent covers, there appears to be no end to the variety of appealing patterns that may be built up. By different arrangements of the units designs are created which are representative of all periods, ranging from the classical to those characteristic of the modern art.



A half-inch wire mesh is used as a support for the designs.

Three Methods of Erecting Applique Designs

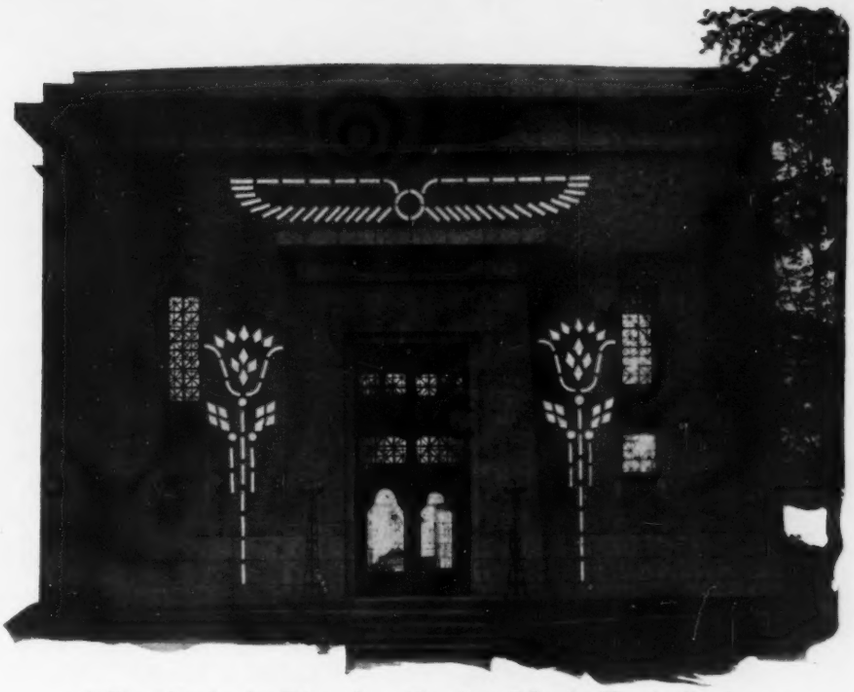
A few arrangements adapted to different types of structures are illustrated, but pictures are wholly inadequate to convey the beauty and fascination of such displays, since the effect so largely depends on color. The units consist of shallow boxes, in which there are sockets for the 10-watt intermediate base lamps. These units have translucent colored faces of glass, "Cel-O-Glass," or other diffusing medium.

The units may be assembled on wire mesh, perforated sheet metal, or wood. Galvanized soldered wire screen of about 1.2 in. mesh is well adapted to this purpose. When painted the color of the surface to which it is attached it is rendered inconspicuous by day. In one system

Lighting

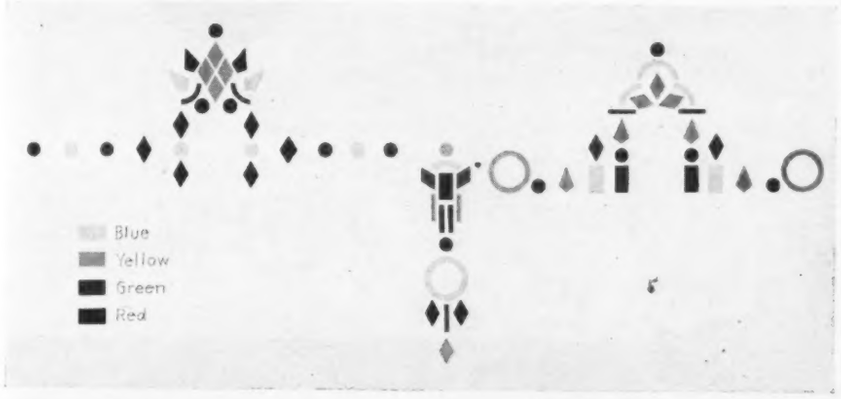
By H. H. MAGDSICK
National Lamp Works, Nela Park, Cleveland

bolts on the back of each applique unit extend through the screen, to which they are fastened by wing nuts and washers. Wiring is facilitated by plug connectors, by means of which the several units of a pattern are connected to each other or directly to the branch line. The wattage per unit varies from 20 to 50, so that a large number of them can be carried on one branch circuit. In fact, for temporary lighting, it is sometimes feasible merely to connect the various assemblies through the windows to the baseboard outlets. Various methods are utilized for fastening the assemblies to building faces. Sometimes they may be suspended by straps, hooked about the parapet, window sills, balcony rails, or other architectural members. Again, the eyelets or hooks used by window cleaners may serve to fasten wire cables on which the screens are slung. Suspension bolts may be inserted between bricks or stones to form the support. The weight of individual assemblies is small, so that the main problem is that of securing them against movement in a high wind. Rubber or cork-tipped fenders should be fastened to the screen to prevent marring delicate surfaces.



A Particularly Pleasing Design Made Entirely from Standard Applique Units

The colors and number of units used are 58 green, 10 red, 12 blue, 42 yellow, a total of 122. The total wattage is 3,200 and can probably be erected for a sum not to exceed $1,200.



Two Applique Design Types for Average Typical Stores

The sketch above shows the color scheme. The colored units used are in the standard shapes shown, have 19 green units, 18 red, 15 blue, 26 yellow, making a total of 78. The total wattage is 2,440 and the probable over-all cost would not exceed $800.

Several possible variations from the details indicated above are obvious. Instead of having the cover glasses in a variety of colors, change in color may be obtained by using only white glass faces on all units and inserting lamps of the different colors subject to thermostatic or other automatic control. This has the limitation that the patterns are then less interesting by day. Also, if there is extraneous light from signs or street lamps, the color becomes diluted, whereas if colored translucent faces are employed extraneous light merely helps to build up the brightness of the units in the original color.

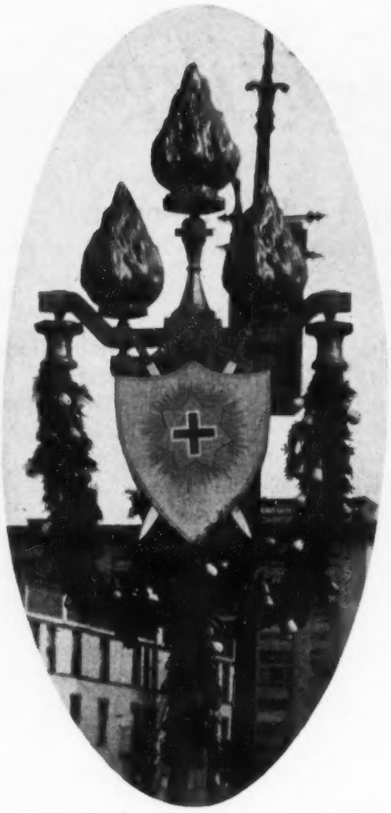
This new medium opens vast fields to light decorators. It may be applied simply or elaborately—with dignity. Experience indicates average unit costs installed are $6.50 to $7 each.

Recent Street Decoration in Seattle Suitable for Jubilee

AS A part of the Knights Templar conclave, held in Seattle, Wash., in 1925 two types of pole decorations were used and are shown in accompanying illustrations. The lighting standards, which normally consisted of five white globes were changed by removing the regular globes and replacing the upper three globes with flame type. From the lower two globes are festooned streams of evergreen in which are hung approximately 40 10-watt lamps of different colors. The cut-out insignia on the pole is indicative of the Knights Templar lodge and of course can be replaced by one that indicates the celebration of Light's Golden Jubilee.

The intermediate standards supported a three-sided translucent set of banners which are held in a rigid framework on the side and by means of weights shown at the bottom of each banner. The banners act as a reflector for a large portion of the light, in this way floodlighting the sides of the building, adding in this manner to the general illumination. The banners proper are made of heavy duck with the design painted on in translucent paints. The poles supporting these banners are constructed of wood with a stiffened plaster base, as shown in the illustration.

In Seattle a Decorative Scheme Was Applied by Erecting Wood Poles with Translucent Banners Made of Duck Oiled and Painted

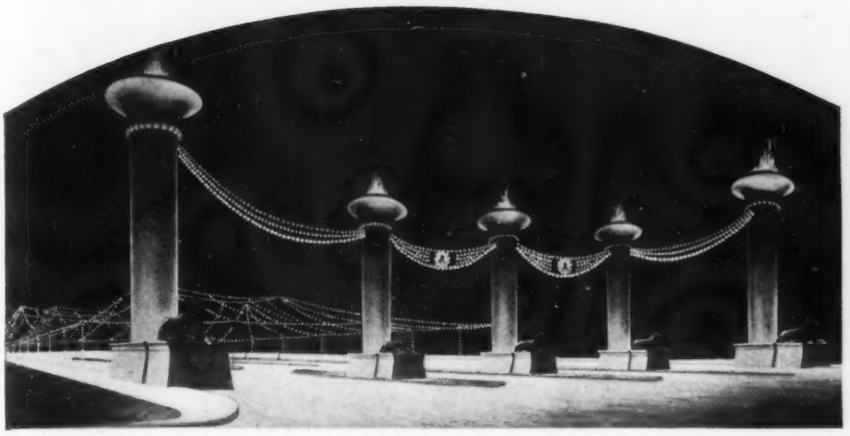


Simple Decorative Scheme Applied to a Standard Five-Lamp Street Lighting Fixture

This gives a pleasing jubilee effect with little expense. By dipping ordinary globes in gold or yellow dye good results can be obtained still more economically.

Street Decoration in Seattle Using Regular Street Lighting Standards

Flame type globes and illuminated festoons. Alternate standards are specially erected and serve for hanging ornamental decorations and to support lights to floodlight building fronts.



Mystic Columns Using Steam Urns Illuminated by Colored Lights Present an Attractive Gateway Treatment

Mystic Columns Effective

A WEIRD but attractive effect may be gained by the use of mystic columns. The five columns used in the design shown in the accompanying illustration are constructed of steel framework with cement stucco on steel lath and have a total height over all of 40 ft. above the street level. The illuminated streamers between are simple festoons.

Some source of live steam is necessary to gain the full effect. This is piped up each of the pillars and is allowed to exhaust through a circular ring type of nozzle at the top of each pillar, around which are grouped a series of lamps that reflect the light upward into the escaping steam. Very beautiful effects can be obtained by changing the color reflected from this escaping steam, using standard sign-flashing equipment for the purpose.

A recent estimate has indicated the cost of five towers completely equipped, except for the electrical display, to be $35,000 and for two such towers the estimate was $11,000. This included the pedestal at the base of the towers and the figure of the lion shown in front of each tower. The electrical equipment, depending upon the complexity, would probably add a thousand dollars to the cost of each tower. Besides the lighting of the steam urns and the light streamers between the arches, the only other illumination is at the base of each tower.

The columns were designed by W. D'A. Ryan of the Illuminating Laboratory of the General Electric Company.

Industrial Buildings May Reflect the Jubilee Spirit

BEAUTIFUL effects may be obtained through a combination of many types of lighting as shown in the accompanying illustration, which depicts the way Nela Park looked from a Cleveland street during the Christmas celebration of 1928. Here may be seen a combination of sign lighting, outline and decorative lighting, simple lighted wreaths and loops on the fence, floodlighting and a scintillator on top of the buildings. The scintillator may be equipped with color screens.

Jubilee Banner (3x5 ft.) Adds Golden Color to Daytime Decorations

Light's Golden Jubilee

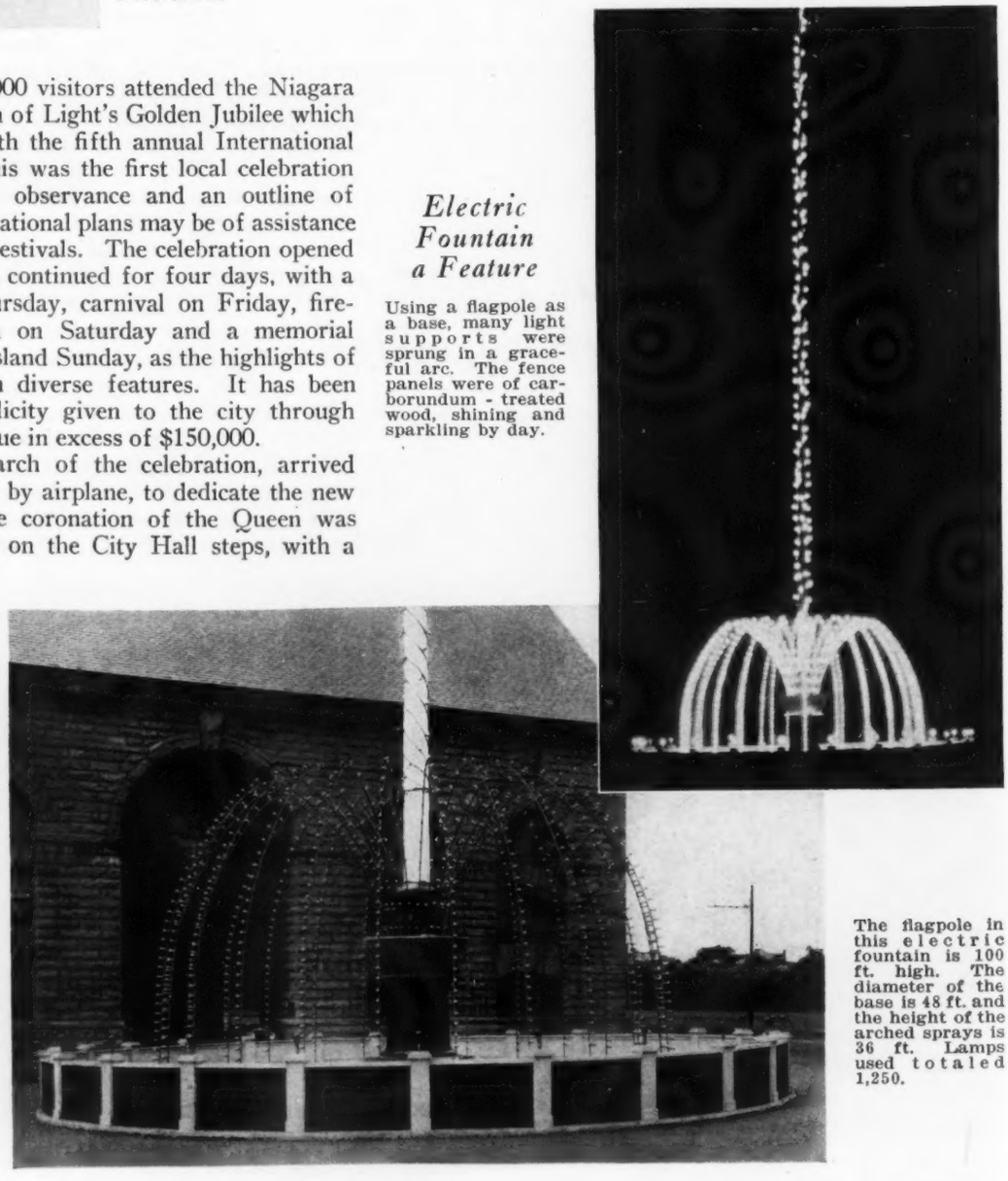
First local celebration of national observance features events of 50 years ago. Light, parade, fireworks and illumination of the falls used to develop community interest. Organzation plans

MORE than 150,000 visitors attended the Niagara Falls celebration of Light's Golden Jubilee which was coupled with the fifth annual International Festival of Lights. This was the first local celebration of the national jubilee observance and an outline of the program and organizational plans may be of assistance to those planning later festivals. The celebration opened Thursday, June 13, and continued for four days, with a pageant parade on Thursday, carnival on Friday, fireworks and illumination on Saturday and a memorial mass meeting on Goat Island Sunday, as the highlights of a program packed with diverse features. It has been estimated that the publicity given to the city through the celebration had a value in excess of $150,000.

Queen Electra, monarch of the celebration, arrived on Thursday afternoon, by airplane, to dedicate the new municipal airport. The coronation of the Queen was held Thursday evening on the City Hall steps, with a battery of movie cameras grinding away, and then the Queen took her place with her court on the magnificent throne car to lead the 4-mile pageant parade through the streets of the city. The parade far exceeded in beauty even the expectations of the committee which planned it, and more than 100,000 people lined the streets to witness the spectacle. Friday was given over to a flag day celebration, with an open air street dance in a court of honor lined with multi-colored lamps. On Saturday three different parades were staged by members of the Loyal Order of Moose, which was meeting in convention, and the evening festivities began with the arrival of a tourist party in the costumes of 1879, representing the many thousands who came from

Electric Fountain a Feature

Using a flagpole as a base, many light supports were sprung in a graceful arc. The fence panels were of carborundum - treated wood, shining and sparkling by day.



The flagpole in this electric fountain is 100 ft. high. The diameter of the base is 48 ft. and the height of the arched sprays is 36 ft. Lamps used totaled 1,250.

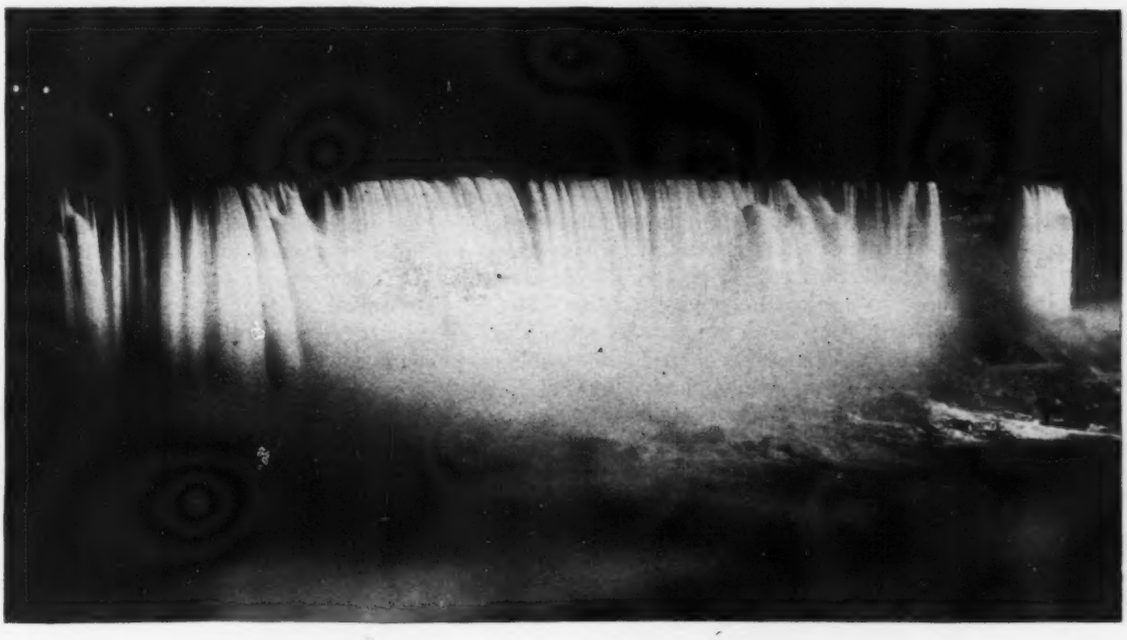
at Niagara Falls

By
ROB ROY MACLEOD
Buffalo, Niagara & Eastern Power Corporation, Buffalo, N. Y.

Floodlights, Colored Golden and in Many Hues, Competed with Fireworks in Illumination of Falls

all parts of the country 50 years ago to see the first lighting installed at Niagara Falls. Tourists arrived in a New York Central train labeled the "Jubilee Special," on which the engine and coaches were made to look like those of 50 years ago. They proceeded down Falls Street in horse cars and hacks to witness the lighting in Prospect Park. This lighting consisted of a feeble glow thrown by old style open type arc lamps through colored glass on a fountain in the park. The same men who handled the lights and handled the fountain 50 years ago repeated their performance. The full force of the 1,440,000,000-cp. searchlight battery was then thrown on the falls in golden light, finally sweeping into the sky to perform the ghost dance and the spectacular sky drills. As the light fell back on the falls again an airplane circled over Goat Island in a sham air raid, dropped multicolored aerial bombs. From the Goat Island cliff bombs and rockets were shot up in imitation of an anti-aircraft battery, while the searchlights again swung into the sky to locate the planes. This entire spectacle was described by Graham McNamee over the red network of the National Broadcasting Company during the General Electric hour. McNamee stood with one foot in Canada and one foot in the United States, while his colleague, Philip Carlin, went down to the base of the falls and put the voice of Niagara on the air. The regimental band of the Toronto Regiment furnished the musical interludes during the program.

Father Louis Hennepin, who arrived at Niagara Falls 250 years ago, was honored on Sunday by a Pontifical High Mass sponsored by the Knights of Columbus and attended by dignitaries of the Roman Catholic Church from all parts of the east. The mass was held before



Scintillator Battery of 1,440,000 Cp. Lights American Falls

Medium-intensity, color-screened, universal-mounted searchlights, numbering 24 and of 36-in. size, flooded 840,000 sq.ft. of area.

a specially built alter on Goat Island and was broadcast over station WKBW of Buffalo. Sound and silent pictures of this affair were made by every film news weekly in the country.

The effect on the community of this celebration was fully as important as the nation-wide publicity brought to the city. Throughout the four days the arc street lighting system was converted from white to gold by the use of color caps inside the globes. These caps consisted of wire netting wrapped with mica and presented a beautiful effect. The streets were decorated with gold and white bunting, American and Canadian flags and special golden banners bearing a picture of Thomas A. Edison and the legend Light's Golden Jubilee, 1879-1929. Merchants co-operated by placing golden lighting in their windows together with pictures of Thomas A. Edison.

Merchants Reproduced Spirit of 50 Years Ago in Window Decorations

A large number of merchants went even further, contrasting in their windows the displays of 50 years ago as compared with the displays of today. Merchants who did this attracted to their stores a constant stream of visitors, and in one case, where a lady's wardrobe of 1879 was contrasted with one of 1929, it was necessary to have two policemen on duty to handle the crowd. Floodlighting on buildings in various parts of the city was made golden in honor of the occasion. Even traffic signs marking the city limits were changed from white to gold. In order to secure the gold effect a crew of men was sent out with lamp kits. Immediately preceding them was a man who sold merchants the idea of golden lighting. The dippers followed, converting the lighting, and then another man followed immediately with pictures of Thomas A. Edison. In this way they covered the entire business section and secured the co-operation of merchants.

Other lighting effects included the transformation of the Falls View Bridge illumination from white to yellow, the suspension of hundreds of many-colored lamps in a network of streamers over the area reserved for the street dance, the use of colored lamps by hotels and stores, etc. A miniature display of a city street, with signs and buildings properly illuminated, was set up in a vacant store and attracted great attention. This display was a part of the exhibit of the Edison Lamp Works of the General Electric Company during the N.E.L.A. convention at Atlantic City.

Publicity was handled by a special committee which sent out stories to the local press and also to the national wire and picture services. The movie newsreels were interested in the affair by this committee, as were the the local radio stations. Contact was established with New York to bring feature writers up to cover the various events. Local business organizations were induced to carry panels in their advertising calling attention to the celebration, and the United Hotel Corporation printed an announcement of the celebration on the backs of its menus throughout the country.

Another committee was in charge of traffic arrangements, working with the local police to see that streets were closed for the parade and that the tremendous volume of traffic from Buffalo, Toronto and other nearby points was cleared as rapidly as possible as soon as the various events were over.

The committee on the parade worked in close co-operation with military bodies, fraternal and civic organizations, the schools and the boy scouts, inducing them to participate in the parade. It also worked with social clubs and similar organizations to build up the grotesque section which was a feature of the parade. The matter of securing bands was largely up to the individual organizations, although the committee also helped to solve this problem. Closely allied with this committee was another working on floats. A special float decorator was brought in to create the desired floats and merchants and industries were encouraged to participate, with the result that more than 60 floats were in line. Commercial activity, such as distributing literature and samples, was taboo, with the result that the parade was a beautiful spectacle.

The committee on special features arranged the coronation of the Queen on the City Hall steps and the reenacting of the historical scene of 50 years ago with the party of tourists. The Niagara Falls Power Company, as a special feature, designed a golden fountain of light surrounding the flagpole at its Edward Dean Adams station. A long spiral of golden lights was wrapped around the flagpole from top to bottom, and springing out from the section were arches of golden light, beginning at the flagpole and extending to the ground. This feature alone attracted a great many spectators and a crowd was on hand every night while it was in operation.

There were many novel and interesting decorations. One marching unit was completely equipped with lapel lights, consisting of a flashlight bulb set in a reflector in the lapel of the coat with the battery in the pocket. An arc searchlight was mounted on a street railway flatcar and preceded the parade, flashing its beam into the sky in all directions. The Queen carried a beautiful bouquet, a combination of natural and electric flowers. Each member of another organization had small electric lights in colors on his shoes, while others wore shoes painted with luminous gold paint.

Floats in the parade cost from $200 to $1,000 and ranged from the magnificent to the grotesque. The Queen's throne was a golden sea shell drawn by two swans. Another float consisted of a large swan with two electric eyes completely concealing a tractor and drawing a model city, with street cars and automobiles in the streets, all the windows blazing with lights, a floodlighted skyscraper with an aërial beacon on top and an illuminated bulletin board announcing the celebration of Light's Golden Jubilee.

The organization, which is permanent as far as the Festival of Lights is concerned, inasmuch as that celebration is held every year in June, was as follow: In control was a governing board under the chairmanship of Mayor William Laughlin of Niagara Falls, N. Y., with Charles Swayze, Mayor of Niagara Falls, Ont., as vice-chairman. Advising and assisting this group was the citizens advisory committee on Light's Golden Jubilee, under the chairmanship of Fred J. Coe, president of the Chamber of Commerce. The general committee of the Festival of Lights, which was the executive body, was under the chairmanship of Francis D. Bowman, advertising manager of the Carborundum Company. Mr. Bowman, who is a man of great experience and splendid showmanship, is largely responsible for the success of the celebration. Under this general committee were the detail committees, consisting of groups under the chairmanship of various members of the general committee. These had in their charge special features, attendance of prominent guests, decoration of streets and business places, publicity, co-operation with police, parade arrangements and floats. The organization functioned smoothly and the Golden Jubilee celebration was tied in with the fifth International Festival of Lights without the slightest friction, according to all observations.

New England's Jubilee

Will Be Highly Diversified

Plans gathering momentum. Floodlighting and window displays to be featured. Varied methods of honoring Edison will be utilized

OBSERVATION of the opening display of jubilee lighting at the recent Atlantic City convention of the National Electric Light Association, combined with the persual of extensively illustrated reports of this exhibition and informal discussion of the forthcoming Edison anniversary, have effectively launched the movement to appropriately commemorate the occasion in New England during the summer and fall months. While many details remain to be settled among individual companies, there is no question that a widespread observance of "Light's Golden Jubilee" will take place and that events will move to a fitting climax on the night of October 21, when the dedication of the Edison Museum and Edison School of Technology at Dearborn, Mich., will attract the attention of the entire civilized world.

The Associated Industries of Massachusetts has started a co-operative program with the Edison Electric Illuminating Company of Boston to feature the jubilee at the October exposition of the former organization, where interesting displays of Edisonia will be made in connection with exhibits of Massachusetts products. The Boston Chamber of Commerce has indicated its interest in the jubilee and it is expected that a regular luncheon meeting will be held in October at which a distinguished representative of the electrical industry will speak to 500 assembled members and guests on the significance of Edison's work and achievements. It is likely that an exhibit of incandescent lamp evolution, and particularly of electric lighting products made in New England, may be on display at the chamber's offices if suitable space arrangements can be made.

The co-operation of many other boards of trade, chambers of commerce, etc., is well assured throughout many parts of New England, although at this writing detailed steps have not been taken in this direction. The jubilee movement impetus has thus far been apparent chiefly in the light and power industry, on account of the naturally early interest of that industry in the matter.

The companies under the management of Charles H. Tenney & Company will probably undertake extra floodlighting, window displays and other publicity. The New England Gas & Electric Association properties are making an investigation of display programs and the managers of the subsidiary properties of the New England Power Association are scheduled to consider the jubilee and its celebration at the July meeting of this group. The Fall River Electric Light Company anticipates favorable consideration by the city of a plan to floodlight the public library building by units mounted on the company's building directly across the street from this beautiful structure. This library is approximately 100 ft. long x 50 ft. wide, some three stories high, and would require eight 500-watt reflector units costing about $37.50 each, or about $600 including wiring, etc. About 20 kw.-hr. per night would be consumed.

It is expected that the Massachusetts State House and Bunker Hill Mounument will be floodlighted after appropriate studies are completed. Many statues will be

floodlighted in addition to those now under intensified illumination.

The Western Massachusetts Companies property managers are all eager to co-operate in the jubilee celebration and will resort to floodlighting and other methods up and down the Connecticut Valley and in the Berkshire district. The Boston Edison Company will undoubtedly utilize floodlighting extensively and has suggested that on the night of October 21 a huge general display of all flood- and searchlights in and around Boston be made, a feature being the training upward of all available projector type lamps simultaneously for an hour or two. Floodlighting and window displays will be extensively utilized by the Twin State Gas & Electric Company.

Specific Steps Planned by Utilities

FROM a very recent survey of leading New England power companies it appears that the following items in the way of celebration have been approved and will be employed in varying degree on local properties:

1. Photographs of Thomas Alva Edison will be extensively displayed in office windows and electric shops. These will in many cases be spotlighted.

Such units can be purchased at from $8 to $15 apiece, with 100 to 200-watt lamps, and a pair will "spot" a portrait effectively when mounted at opposite corners of the window. These units are useful on pictures running as high as 3 ft. square, and the larger lamp wattage is recommended for general practice.

2. Universal decision has been reached to make the fullest possible use of the new U. S. 2-cent postage stamps featuring the golden jubilee of electric light.

3. Plans are under way for considerable radio broadcasting by executives of the electrical industry having access to broadcasting facilities.

4. Much interest has been shown in obtaining approximate replicas of the original Edison lamp for display in offices, libraries, show windows, schools, museums, etc.

It was announced at Atlantic City that these can be obtained for 90 cents each from the National Lamp Works or any of the "Mazda" companies.

5. A number of central-station companies are planning to sponsor contests among school pupils for the best essays on the life and work of Mr. Edison.

In some cases newspapers have shown much interest in this plan and will take over the essay contest and award the prizes.

6. Newspaper advertising featuring the jubilee will be extensively employed by the electrical industry.

7. Some demand has already been indicated for desk-size paper weights in the form of a bust of Edison.

8. The Massachusetts Institute of Technology has announced its intention to feature "Edison Night," October 21, by special illumination of its buildings from the interior and by flood- and searchlighting outside.

9. Public libraries will be asked to co-operate by special displays of books, photographs, replicas, etc., of Edison interest.

The library of the Boston Edison Company has already collected its Edison books for special display and use during the period of the jubilee.

10. Plans are afoot among New England central stations for the preparation of many articles, newspaper and magazine, emphasizing the human side of Mr. Edison's life, the romantic thrill of his researches, the patient overcoming of obstacles which characterizes his efforts, and the significance of his achievements to the world.

11. Special Edison messages are under consideration for talking signs, notably the large installation of the Boston Edison company in the Boston Back Bay district.

12. Widespread interest has been shown by New England central stations and electrical manufacturers in the reprints of the New York *Herald* of 1879 featuring the story of Edison's invention of the incandescent lamp.

These were quoted by the General Electric Company at Atlantic City as selling for $8 per 1,000 copies.

13. Electric fountains will be employed, where available, to emphasize the jubilee.

A large and fine permanent electric fountain now in service on Lynn, Mass., Common, will be operated on a greatly increased schedule.

14. A preliminary demand is appearing for Edison statues of material suitable for temporary floodlighting.

15. The evolution of the incandescent lamp will be featured in many displays, showing the major developments from 1879 to date.

16. Charts and graphs showing the growth of lighting business from the earliest days of the industry will be prepared for window and office display, reproduction in advertising form, and possibly for animated movie use.

17. The Rhode Island Electrical League will devote liberal space at its fall "Electrical and Radio Exposition" to the jubilee. One day will be set aside as "Edison Day."

18. Lighting displays will be attempted features of every outdoor carnival and show held this summer, according to plans under way in Boston.

It is probable that a floodlighted truck will be operated in the streets during the week ending October 21.

19. There is under consideration a plan for a special Golden Jubilee Show at Keith's Theater, Boston, this fall to signalize the use of electricity by this, the first customer of the Boston company.

20. A radio talk by Governor Allen of Masschusetts is on the list of jubilee celebration items now being planned.

21. Little has been done as yet regarding outline lighting in New England, but this is under consideration.

Naval co-operation is anticipated in harbors along the coast.

22. Floodlighting will probably form the keynote of the New England celebration.

Traymore Towers Illuminated

MANY beautiful floodlighting jobs were accomplished by the Light's Golden Jubilee committee at Atlantic City in the brief time allotted before the Atlantic City convention. Opinions may vary as to which produced the finest spectacle, but the beautiful and unusual architecture of the Traymore made possible a remarkable creation in lights and shadows.

Altogether 67 type CA-14, 500-watt projectors; 41 type CA-10, 250-watt projectors and six type SA-12, 250-watt projectors were used. A total of 114 projectors, all operated two in series on 220 volts, gave a total load of approximately 60 kw. Numerous small lights were placed within the turrets and the domes. This job, including material and labor, aggregated $10,000 and was installed by the Westinghouse Lamp Company.

The building being constructed of a buff-colored brick and all of the floodlights being equipped with amber-colored screens the reflected light was of a beautiful golden glow.

Amber Lights and Shadows on Seashore Hotel Tower

Courtesy Westinghouse Lamp Company

Spectacular Lanterns for Festival Lighting

By S. E. HIBBEN
Westinghouse Lamp Company, Bloomfield, N. J.

WITH development of new materials the construction of attractive and spectacular lamp coverings is made easy. Two of these constructed at the Westinghouse Lighting Institute are shown in the accompanying view and the relative size can be observed from the worker on the cylindrical shape. The hexagonal shape to the right was constructed of a translucent green material called "Protectoid" and the cylindrical shape to the left is a similar translucent gold colored material. Two companies manufacture this material, Du Pont at Wilmington, and the Celluloid Corporation, Newark, N. J., the latter company's product being known as "Protectoid." It is a celluloid base, slow burning and quite heavy, and comes in a great many different colors and patterns. It can be bent and twisted with little damage, or fastened onto wire frames and glued together by means of a specially prepared glue that can be obtained from the Acetol Products Corporation, New York City. The material used in the lanterns illustrated comes in sheets and rolls and costs approximately $1 per square yard.

Courtesy Westinghouse Lighting Institute

Easily Worked Materials Simplify Lantern Fabrication

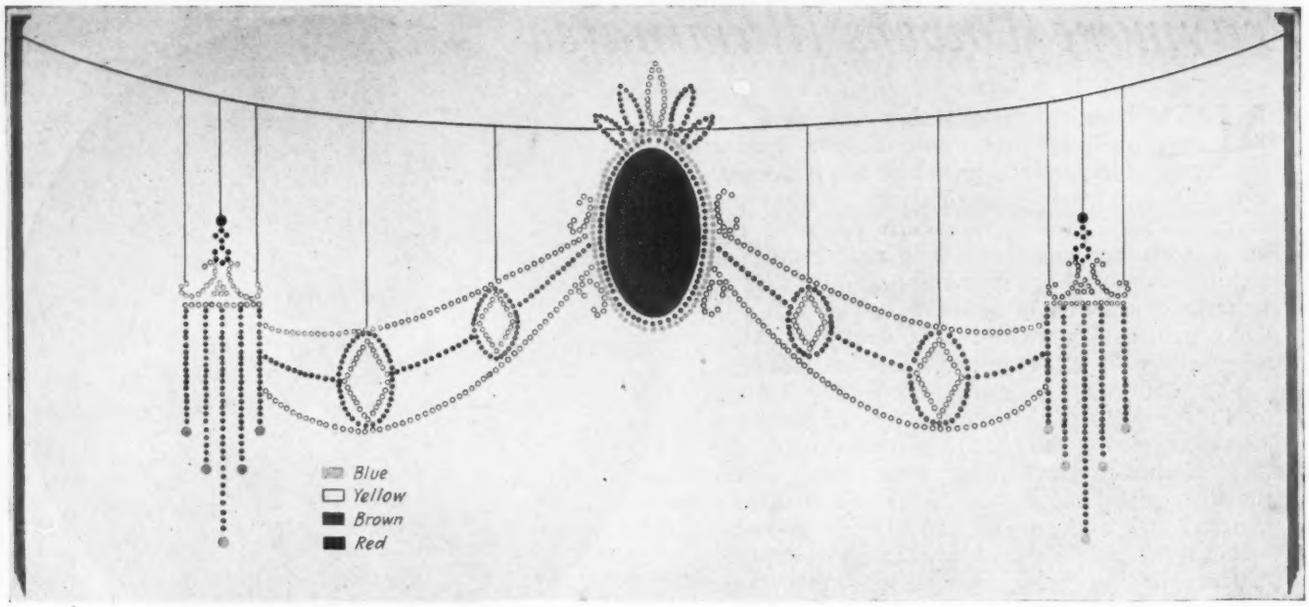
The wire frames may be constructed by any concern that manufactures such material.

The Acetol Products Company also manufactures a material known as "Cel-O-Glas," which is suitable for producing color in lamps or the making of lamp shades. This material is made from ordinary fly screen and is coated with a clear compound that completely covers the wire and fills the spaces between so that the screen furnishes a waterproofed material. The wire screen adds considerable stiffness and can be painted.

Courtesy General Electric Company

Gigantic Lanterns Over Driveway

An attractive display along the approach to Union College, Schenectady, was formed by large lanterns during a recent celebration. These were made of treated duck, lightly varnished and painted in various patterns with transparent paint. They could be constructed of the new material suitable for lantern construction as mentioned in accompanying text. Three or four 200-watt colored lights were used and arranged to flash on and off haphazardly.



Decorative Types of Cable-Supported Arches

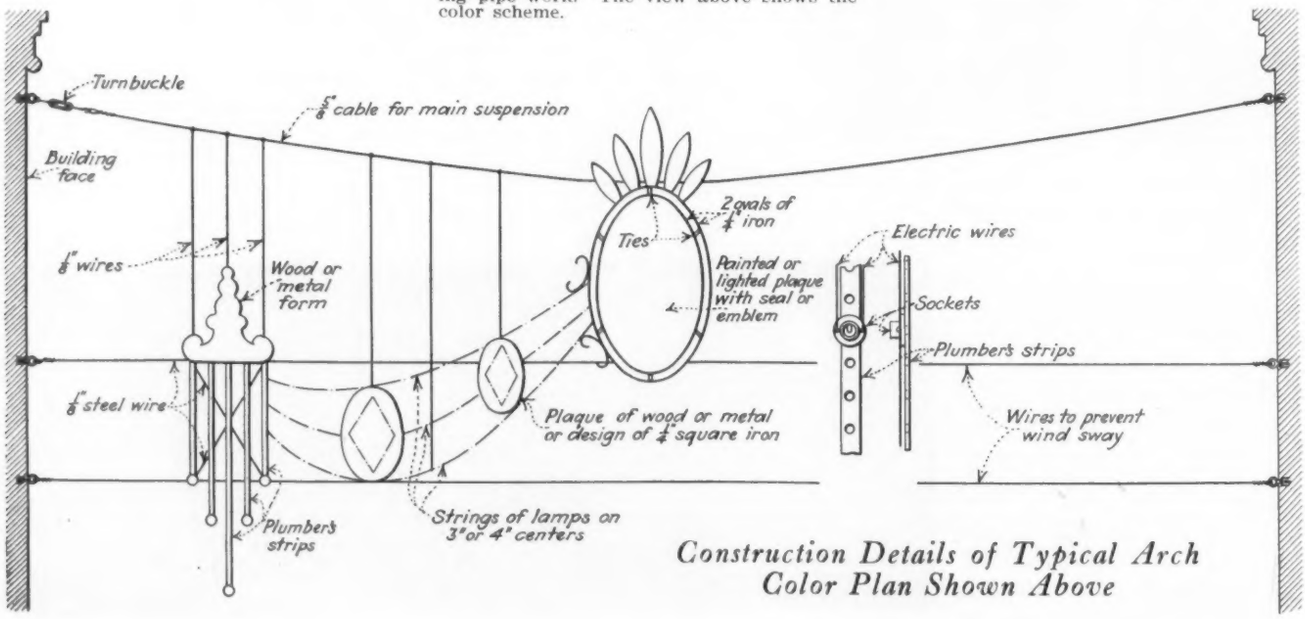
Method of Supporting Cross-Street Decorations

The weight of the structure is supported from a ⅝-in. steel cable and the principal figures and medallions are hung from this cable by the use of "plumber's strips" clamped to the cable at the top with the medallion bolted in place. The streamers festooned between the medallion figures of the arch are strings of lights with the sockets on 3-in. or 4-in. centers. "Plumber's strip" is flat steel strips punched with frequent holes and generally used in supporting pipe work. The view above shows the color scheme.

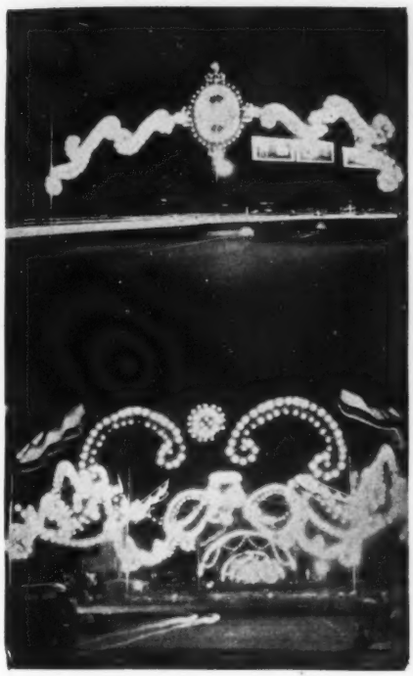
By G. R. LaWall

National Lamp Works, Nela Park, Cleveland

TIME-WORN festoons and garlands consisting of mere strings of light across main streets are generally a thing of the past. Very beautiful effects have been obtained by the use of decorative arches on many occasions. Four of the illustrations shown herewith are part of an annual religious festival



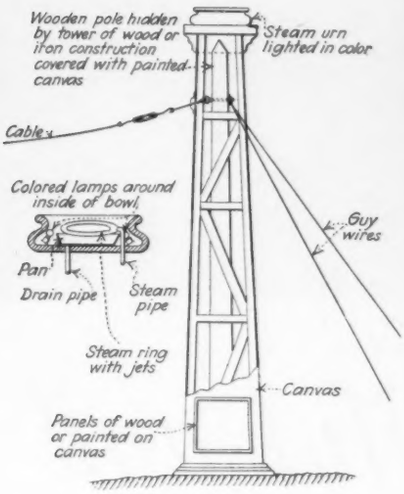
Construction Details of Typical Arch Color Plan Shown Above

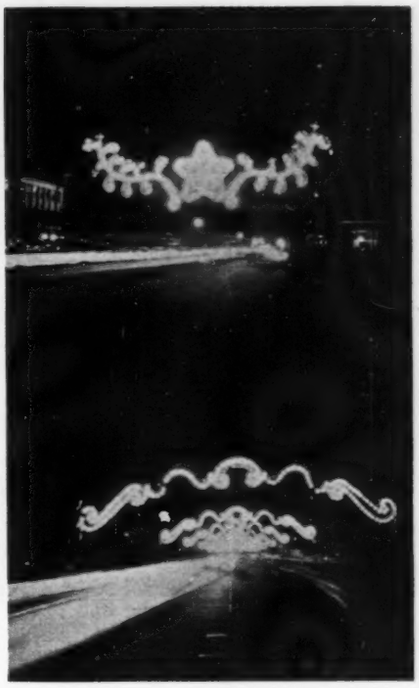


Varied Effects Obtained in Cleveland Religious Festival

ornament construction require twice the number of lights but appears best during the daylight hours.

The open grillwork formation, as shown in the detail below, is more


Wooden pole hidden by tower of wood or iron construction covered with painted canvas
Steam urn lighted in color
Cable
Colored lamps around inside of bowl
Guy wires
Pan
Drain pipe
Steam pipe
Steam ring with jets
Canvas
Panels of wood or painted on canvas



Two Types of Arches Used as Street Decorations

in one of the sections of Cleveland, Ohio.

The new S-11 lamp is particularly suitable for this type of work, although the standard medium base S-14 lamp can likewise be used effectively.

The drawings reproduced show a typical method of support for designs of this type and the details show the type of construction that may be used. The solid boxed-in type of

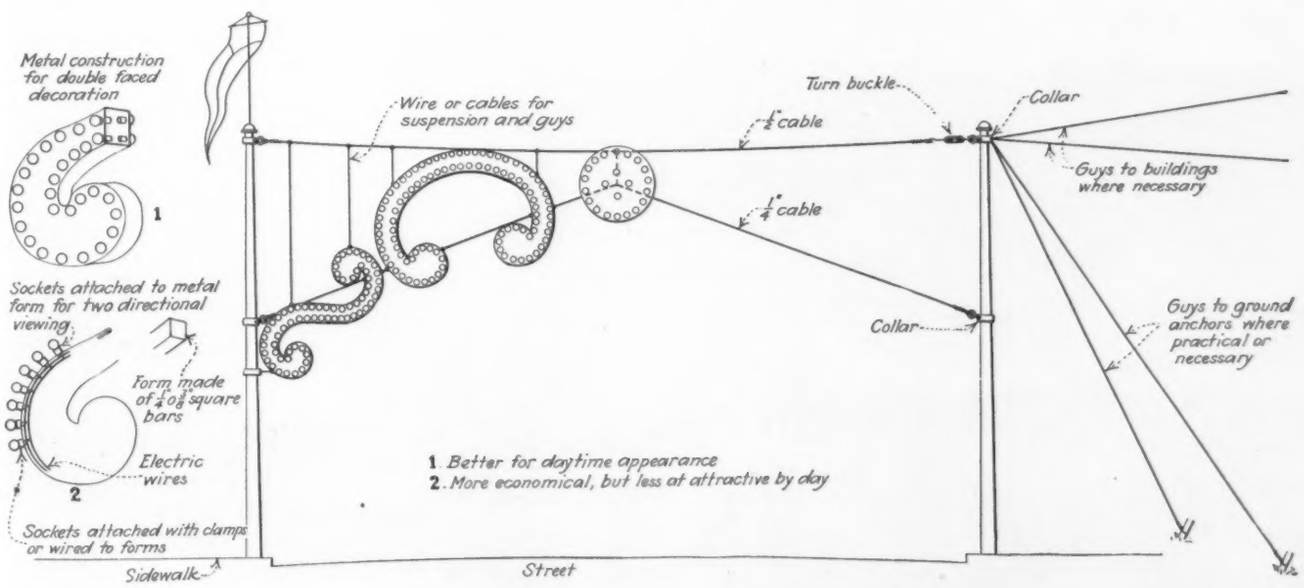
Artistic Support for Street Arches Built Around Pole

Wooden pole incased or hidden by a square tower constructed of light steel angles and flatirons or of wood members and covered either with painted canvas or stucco.

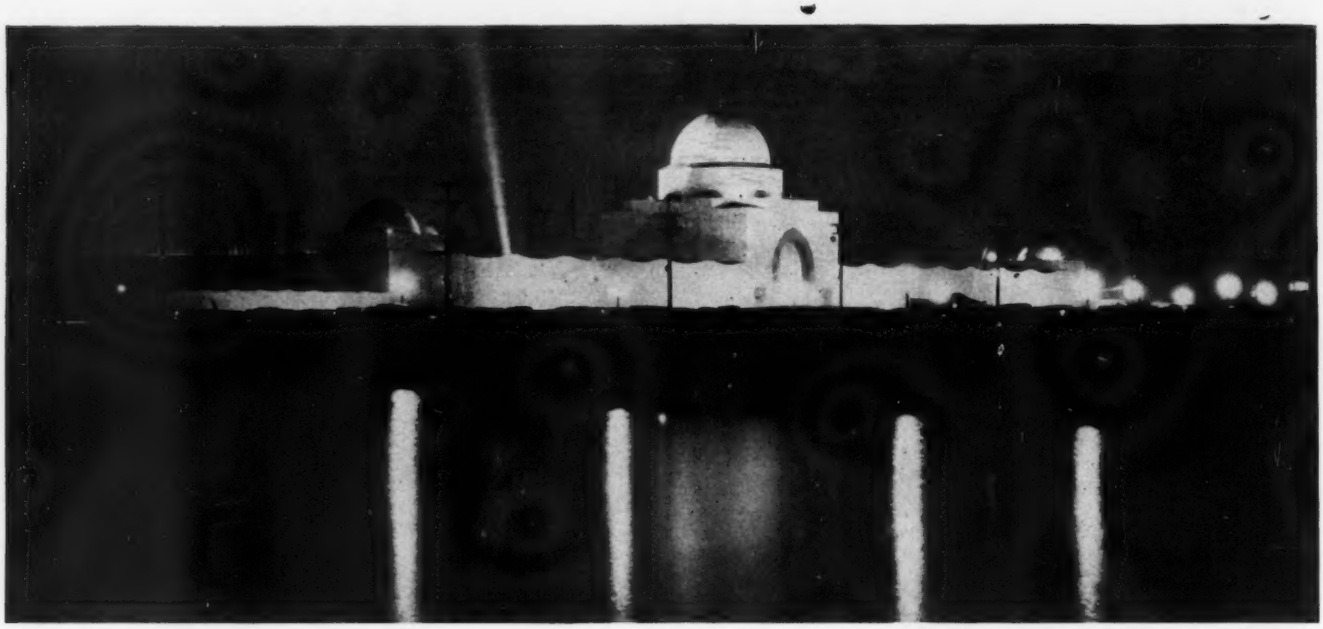
Where steam is available, a steam urn can be supplied at the top of these towers, utilizing a circular iron pipe with a series of 16 in. holes and a set of colored lamps set around the steam urn. In this way a very attractive effect may be gained of colored steam floating from the top of the column. When utilizing the steam urn it is necessary to provide a drip pan that is drained, as a good deal of the condensate as well as rain water will otherwise collect.

economical to construct but does not have as good an appearance during the daytime.

It is almost impossible to estimate the cost of construction as the condition such as the utilization of poles or building fronts to support the cables and the availability of skilled labor in building and erecting the festooned segments make it impossible to allow of a general estimate.


Metal construction for double faced decoration
1
Sockets attached to metal form for two directional viewing
Form made of 1/4 or 3/8 square bars
Electric wires
2
Sockets attached with clamps or wired to forms
Sidewalk
Wire or cables for suspension and guys
Turn buckle
Collar
1/2" cable
1/4" cable
Guys to buildings where necessary
Collar
Guys to ground anchors where practical or necessary
1. Better for daytime appearance
2. More economical, but less at attractive by day
Street

Construction Details of One of the Arches Illustrated Above, Showing Method of Support and Details of Units



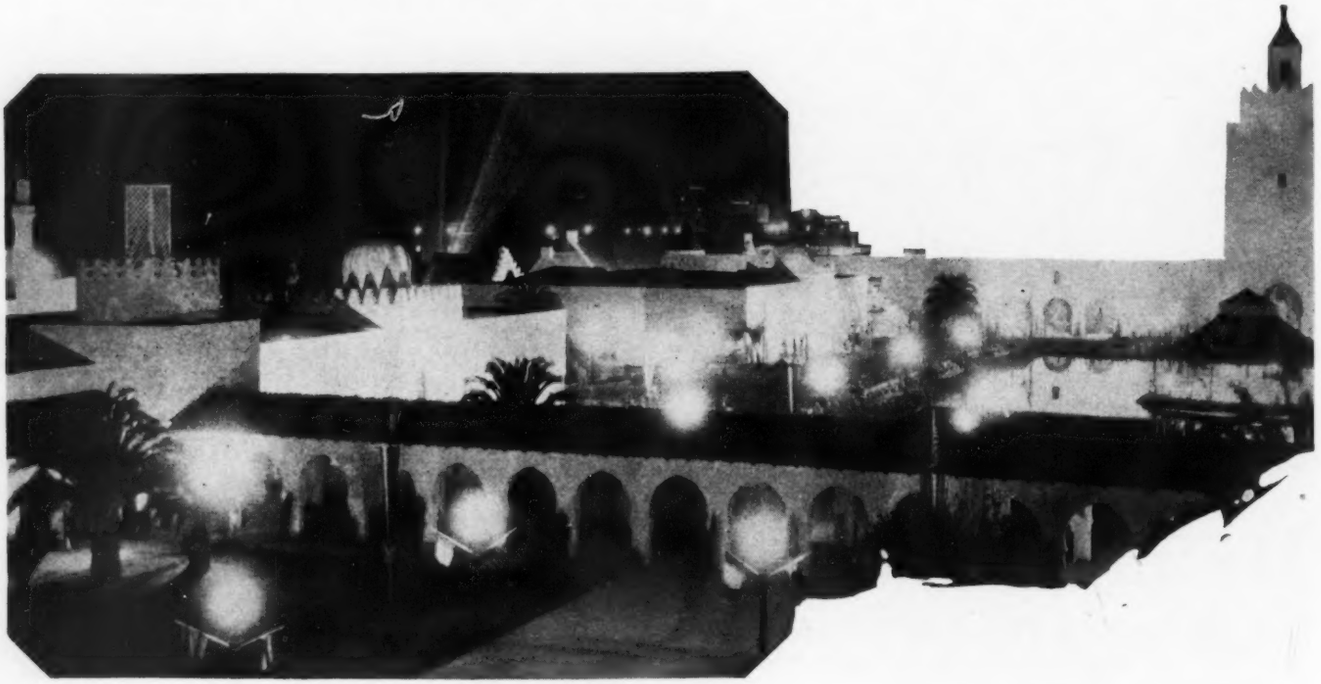
Beautiful and Impressive

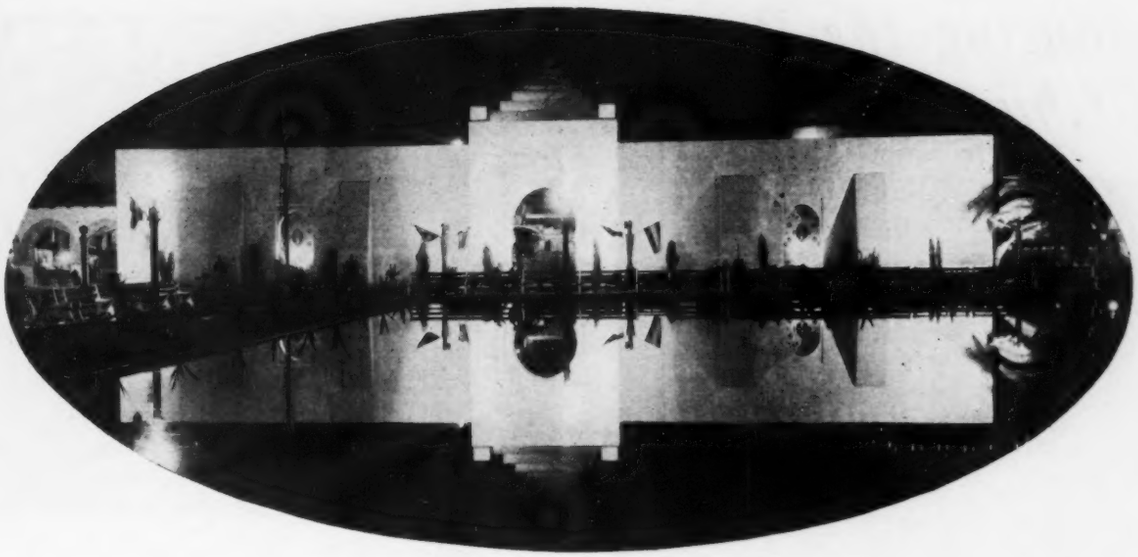
FLOODLIGHTING was extensively used to make the exposition buildings of the Tunisian walled city stand out against the night sky during the Pacific Southwest Exposition, July 27 to September 3, 1928. In addition to 278 1,000-watt floodlights there were many other sizes, including six 1,000,000-beam candlepower Navy searchlights.

The lighting of the streets was accomplished by using single street lighting standards equipped with Westinghouse "Senior" units, 400 and 600-cp., 6.6-amp. lamps used on a series circuit. The glassware consisted of a medium alabaster without refractors, the object being not to diffuse the light down but to spread the light and eliminate as much glare as possible.

Although the use of street lighting standards was somewhat new for the lighting of expositions, everything worked out beautifully in this case, and the result was a soft, restful light facing the public when they entered the exposition grounds from the darker streets on the outside of the grounds.

The buildings throughout the grounds were flooded by means of Olivettes equipped with a 1,000-watt





Effects for Exposition

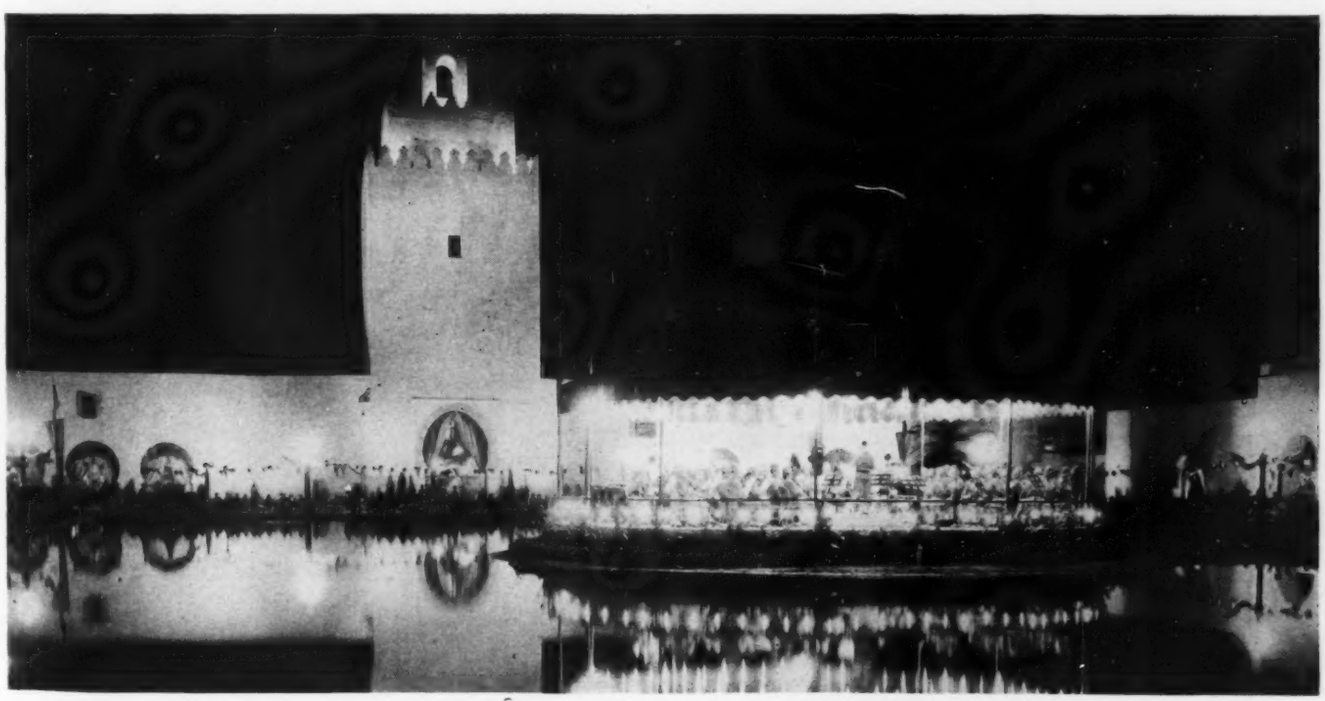
lamp each. The towers and minarets were floodlighted with color-screened floods. The result was that each individual building seemed to stand out by itself and a striking lighting effect was produced.

Around the different arcades ornamental lamps were hung and varicolored lights were placed around the "Pool of Reflections." The reflection in the pool from these lights produced a spectacle which is difficult to visualize.

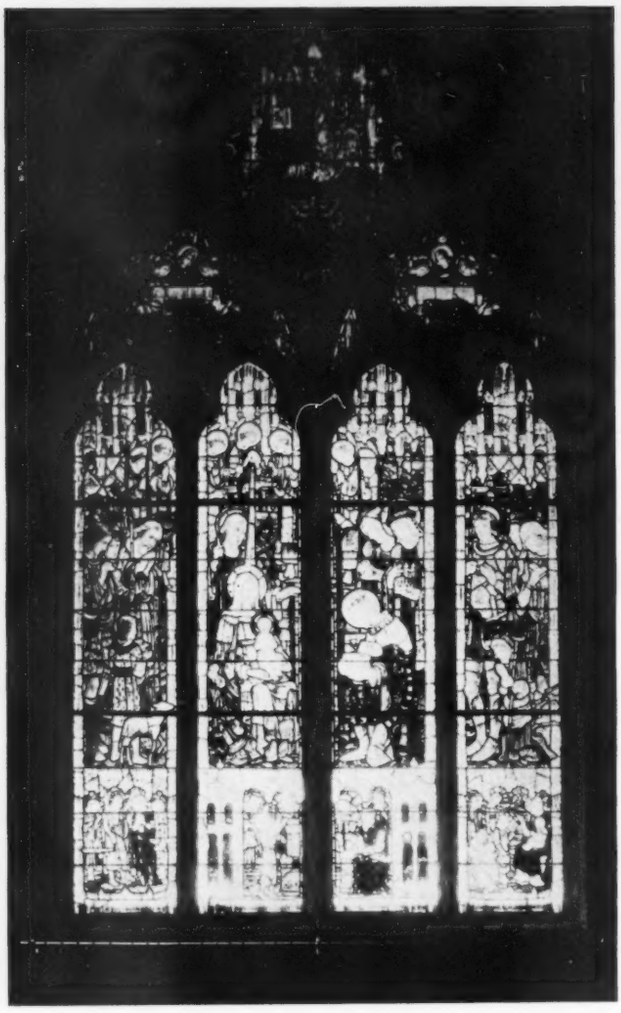
Six 1,000,000-beam candle-power Navy floodlights were used to flood the sky ceiling. The effect of these powerful beams striking the clouds was startling.

The following is a list of the equipment used in the installation:

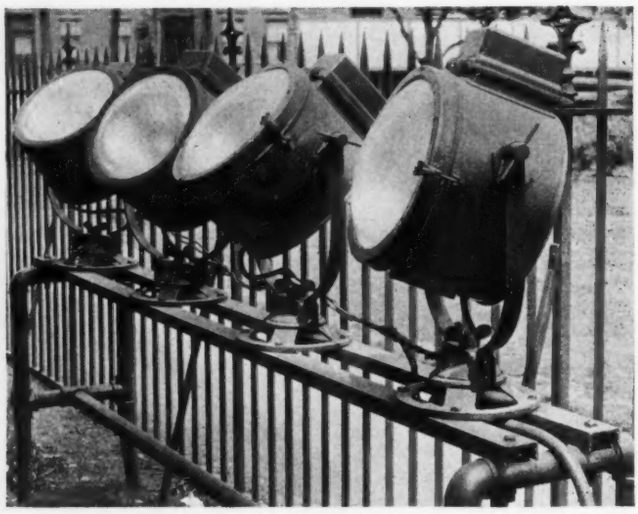
5—2,000-watt spotlights on stands.
56—1,000-watt Epco floodlights.
42—1,000-watt Olivettes in large theater.
20—1,000-watt Olivettes at north playgrounds.
160—1,000-watt Olivettes at all buildings.
6—100-amp. Navy floodlights.
18—500-watt reflector lights.
10—500-watt spot lights.
153—400-cp. ornamental light standards.
20—600-cp. ornamental light standards.



Enhancing the Beauty of Church Window



Altar Window Illuminated from Outside



Bank of Four 1,000-Watt Projectors Floodlight Church Window

NO MORE worthy a place to demonstrate the genuine spirit of Light's Golden Jubilee can be found than in the churches of the country.

In the accompanying illustration showing the Trinity Cathedral in Newark, N. J., four GE 1,000-watt projectors have been mounted outside of the beautiful art glass windows over the church altar which bring out the full brilliance and beauty, during the night hours, that would otherwise lie dormant and unappreciated.

A simple framework serves for mounting the floodlight projectors and the small expenditure of some $250 offers an excellent opportunity for public-spirited citizens who wish to bring the spirit of our peace-time hero into the church life as an influence on the growing generation.

Filling Station Well Illuminated

AUGMENTING the regular street lights, the gasoline service station shown in the accompanying illustration has had the yard and house illuminated by means of four type L-918 lantern floodlights, each equipped with 500-watt lamps. For ornamental effects alone two additional type L lanterns, all of Electric Service Supply manufacture, have been placed on opposite corners of the plot and equipped with 200 watt-lamps.

Here is offered a permanent type of jubilee display that could easily be altered for the celebration weeks in October by substituting gold-colored gelatine screens over the flood projectors.

Service Station Equipped as a Permanent Jubilee Demonstration

The "Jubilee"

in the Middle West

Enthusiastic interest in many cities shows idea has taken hold upon imagination of utility men and others. Specific plans outlined. Light effects predominate

THE states of the central part of the country, from Canada to the Gulf of Mexico, are manifesting an enthusiastic interest in the celebration of "Light's Golden Jubilee." A characteristic of many of the plans and proposals under consideration for the public commemoration of the half century birthday of the incandescent lamp is the acceptance of no small partial responsibility for the success of the celebration by other organizations—business, civic and social service—than the electric utilities alone.

To the first suggestions made at the beginning of the movement last spring, and to the later plans for their participation in the affair, there have come wholehearted responses from municipal departments, from local chambers of commerce and business men's organizations, from service groups, such as Rotary, Kiwanis and Lions clubs, from bodies concerned and associated with the primary and high schools, boards of education and parent-teacher associations, and from many other bodies of civic or semi-public character. As a general condition throughout the central area it is yet too early for arrangements for the celebration to have progressed much beyond the formative stage, although the plans in some cities are fairly well crystallized in regard to designs for displays and the gala lighting of streets and buildings. While all these designs and plans have not reached that certainty of accomplishment that follows the actual money appropriation, most of them will go through to justify discussing them all.

Probably the best and most authoritative picture of the situation as a whole can be obtained from quotations and abstracts of letters received by the editor in response to his request for information from specific companies and cities.

Memphis Organized and Plans Laid

The plan of campaign for Memphis, Tenn., is a comprehensive one and is worthy of emulation by other cities of the same population class. The actual work of preparation for the celebration has been taken over by the Memphis Electric League, which has appointed an active committee of eight men from its membership to push the whole thing through to conclusion. There will be a sponsoring committee consisting of the Mayor and city officials, representatives from the Chamber of Commerce, from service clubs, country clubs and parent-teacher associations. A subcommittee will care for illumination and displays; another will look after the publicity, and a third will arrange for a comprehensive series of talks before clubs and organizations.

The plan for illumination display, tentative as yet, contemplates the floodlighting of the city's two tallest buildings, one of which has just been completed and is 29 stories high. Also, the main street will be illuminated with streamers during the week of Oct. 21. Stores and other business enterprises, many of whose executives will be members of the sponsoring committee, will be asked to provide special illumination and displays. All electrical dealers have been urged to take the lead in this activity. A series of prizes will be provided for the best essays written by high school students of the upper grades; this competition to be open from Sept. 1 to Sept. 30, when the papers will be called in and graded. The definite subject for the essays has not been determined, but it will be concerned with the advantages of electric light.

Bulletins regarding the background of the celebration will be distributed freely to street car riders and display cards will be used on the front of cars. It is expected to tie in all local shows, conventions and celebrations with the jubilee. One of these will be the Tri-State Fair and Dairy Show, which will probably be the occasion for special displays, the plans for which have not yet been definitely determined. At Memphis there is a bridge crossing the Mississippi River over into Arkansas, and on that bridge, or on the top of an office building prominently located, it is proposed to erect a sign reading "Light's Golden Jubilee," in 10-ft. letters.

American Legion to Tie In at Louisville

The national convention of the American Legion is to be held in Louisville, Ky., from Sept. 30 to Oct. 4, 1929. It is expected that more than 100,000 delegates will attend. Robert Montgomery, general sales manager of the Louisville Gas & Electric Company, has been appointed chairman of the convention decorating committee and $10,000 has been appropriated for out-of-door decoration. Through Mr. Montgomery's efforts the American Legion Convention Corporation has authorized the dedication of the opening night of the convention to Thomas Edison and to "Light's Golden Jubilee," and instead of the usual flag decoration, incandescent lights will be used in festoons, arches, etc., on the streets throughout the business section of the city. Other business houses will contribute lighting features.

At Jeffersonville, Ind., Colgate & Company, manufacturers of soap and toilet articles, have a big factory which is directly across the river and easily visible from the business section of Louisville. This company is planning a gigantic fireworks display on the river bank, just in front of its factory building. A large part of this display will be clouds of steam illuminated in various colors by means of floodlights.

A telegram from Morris E. Jacobs, advertising man-

ager of the Nebraska Power Company, indicates the extent of the participation of that company and its service area in the celebration. "Omaha will join in worldwide 'Light's Golden Jubilee.' Downtown arches of lights will depict discovery of the first light. Efforts now being made to tie in celebration here with seventy-fifty 'Diamond Jubilee' of Nebraska. This would make 'Light's Golden Jubilee' tremendous stunt here. Plans now being formulated calling for pageant of light. Window lighting contests and other stunts to create interest. Now discussing essay contests among children. J. E. Davidson vitally interested and will organize local committee here. State plans also being formulated."

Chamber of Commerce Active in Oklahoma City

From George A. Davis, assistant to the vice-president of the Oklahoma Gas & Electric Company, Oklahoma City, Okla., comes a letter from which the following paragraph is quoted:

"We have already received splendid enthusiastic interest and offers of co-operation from all agencies with which we have thus far discussed the celebration. Our local Chamber of Commerce contemplates joining in the celebration with a large membership meeting and has agreed to sponsor it in Oklahoma City. We expect to follow the same policy in all of the towns we serve where chambers of commerce are located and it is expected that all electric and other utility companies will co-ordinate their part in the celebration through the Oklahoma Utilities Association."

According to W. E. Clement, commercial manager of New Orleans Public Service, Inc., it is expected that there will be a large use of streamers and festoons on Canal and St. Charles streets, the main business streets of the city, also of streamers on buildings, that the city hall will be border lighted and that the monument to General Robert E. Lee, which is one of the landmarks of the downtown section of the city, will be brilliantly floodlighted, as will be the company's own building and a number of others.

In Chicago it is proposed that the greater part of the celebration shall be concentrated in Grant Park, which is a large area on the Lake Shore, directly in front of the main business district of the city. It has frequently been referred to as Chicago's front yard. At the south end of Grant Park is the immense Field Museum, which is a beautiful monument standing out very prominently and is seen by thousands of outsiders, as well as city people, every night. The building is of white marble with a smooth surface and remarkably clean. It has been suggested that this structure be bathed in golden light from floodlights placed on all sides. It is estimated that the cost of this installation, temporarily erected, would be about $10,000, or permanently installed about $15,000. Also, in Grant Park, is the Buckingham Fountain, which is reputed to be the largest and most beautiful electrically lighted fountain in the world. The fountain is usually operated only during the summer months, but it is proposed to add greatly to its electrical display features and keep it open until the end of October. At the center of Grant Park it is planned to erect an electrical display consisting of a large outline of Edison's first lamp, about 30 ft. high. Surrounding this lamp would be letters 6 ft. high reading "Light's Golden Jubilee." Within the outline of the bulb would be the profile of Mr. Edison, also in exposed lamps. The profile would flash on first, followed by the lamp outline, followed by the slogan. The shrubbery adjacent to this display will be lighted in various colors with flood lamps and on the anniversary night it is proposed to borrow a locomotive from the Illinois Central Railroad to furnish steam for a large vapor cloud to be illuminated by these lamps. Another suggestion was to rent or purchase from the Goodyear Rubber Company six or more of its standard rubberized fabric, 30-ft. diameter gas bags and surround these bags with hoops studded with golden glow lamps. These bags, anchored at an elevation of several hundred feet, would present a most beautiful effect of sky chandeliers and would be visible for many miles in clear weather. In addition, it is proposed to anchor several barges out in the lake and use them as a base for the display of fireless fireworks.

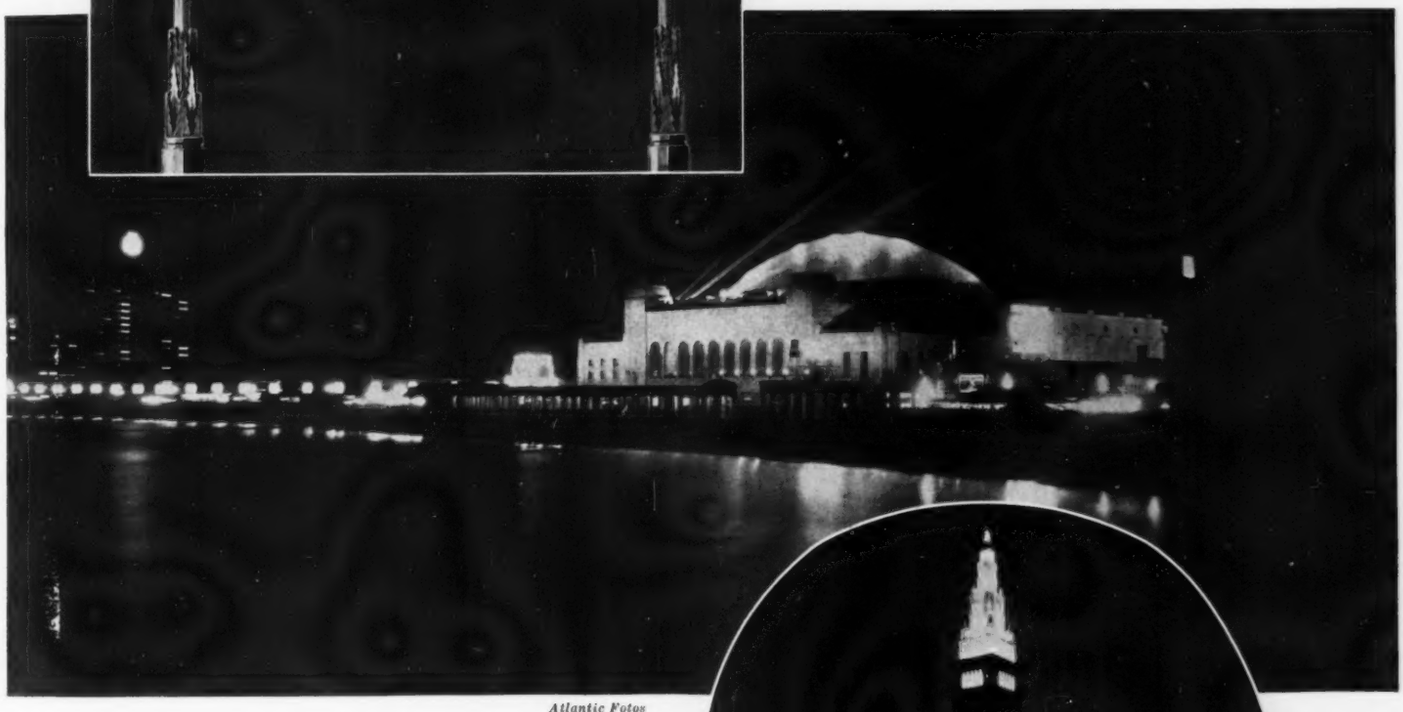
Also in Chicago is what was, on its installation, the highest-intensity street lighting job in the world. State Street still remains as one of the best lighted streets. It is suggested that on each lighting standard on State Street there be erected a series of vertical strings of S-11 golden glow lamps hung from a horizontal messenger extending across the street. These strings will be of graduated length, so that the effect in looking down the street will be of a series of light arches. At both ends of the downtown section of the street where the elevated railway crosses there will be a smaller replica of the display at the north end of Grant Park. On the building of the company itself is proposed to hang rows of display lanterns on the ledges of the second, fourth and sixteenth floors. These plans for the Chicago observance of the fiftieth anniversary are, as yet, only tentative and it is probable that some of the projects here described may be eliminated as being impracticable or of too great cost. However, there will be enough included in the approved program to make Chicago proud of its part in this great anniversary.

Small Towns in Northern Illinois Active

The Public Service Company of Northern Illinois, which serves an area of about 6,000 square miles surrounding and adjacent to Chicago, will naturally not be able to concentrate its efforts so brilliantly as will be done in the city itself. However, the company is not going to neglect this opportunity of bringing itself into favorable public notice. The extent of its activities may be gaged from the organization of its part in the jubilee, which includes, in addition to the general sponsoring committee and general supervising committee, committees on public speaking, advertising and publicity, outdoor decoration and display, store and window display, employee co-operation and co-operation with municipalities. At the time this article was written these committees had not yet fully organized their work and it is therefore not possible to give a detailed outline of what they contemplate.

From the foregoing recital of plans, projects and proposals in the central part of the country it is apparent that the jubilee idea has taken hold upon the imagination of utility men and many others. It is unfortunate that a celebration of this magnitude has no precedent in the experiences of many of the men most interested in it. The result of this unfamiliarity with the job which is before them is apparent from the more or less chaotic condition of the preliminary plans for the celebration. However, there is working in this chaos a powerful leaven of enthusiasm for the opportunity of bringing the electric utilities disinterestedly into the public eye and of gratitude for that great mind on whose thought and dreams and vision the whole electric industry is built.

Suggestions for Light's Golden Jubilee



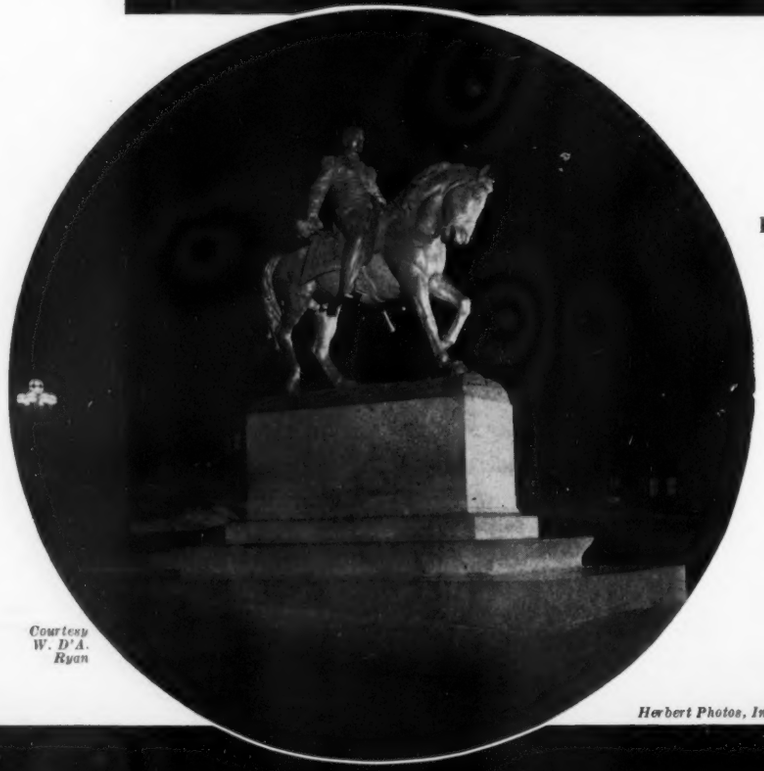
Atlantic Fotos

Where a conspicuous building can be viewed at long range colored floodlighting such as applied to Atlantic City's Auditorium is very striking

ELECTRICAL WORLD

Courtesy National Lamp Works

A tower-type building standing out above its neighbors affords an excellent subject for floodlighting, particularly where reflections can be produced—Cleveland's New Union Terminal

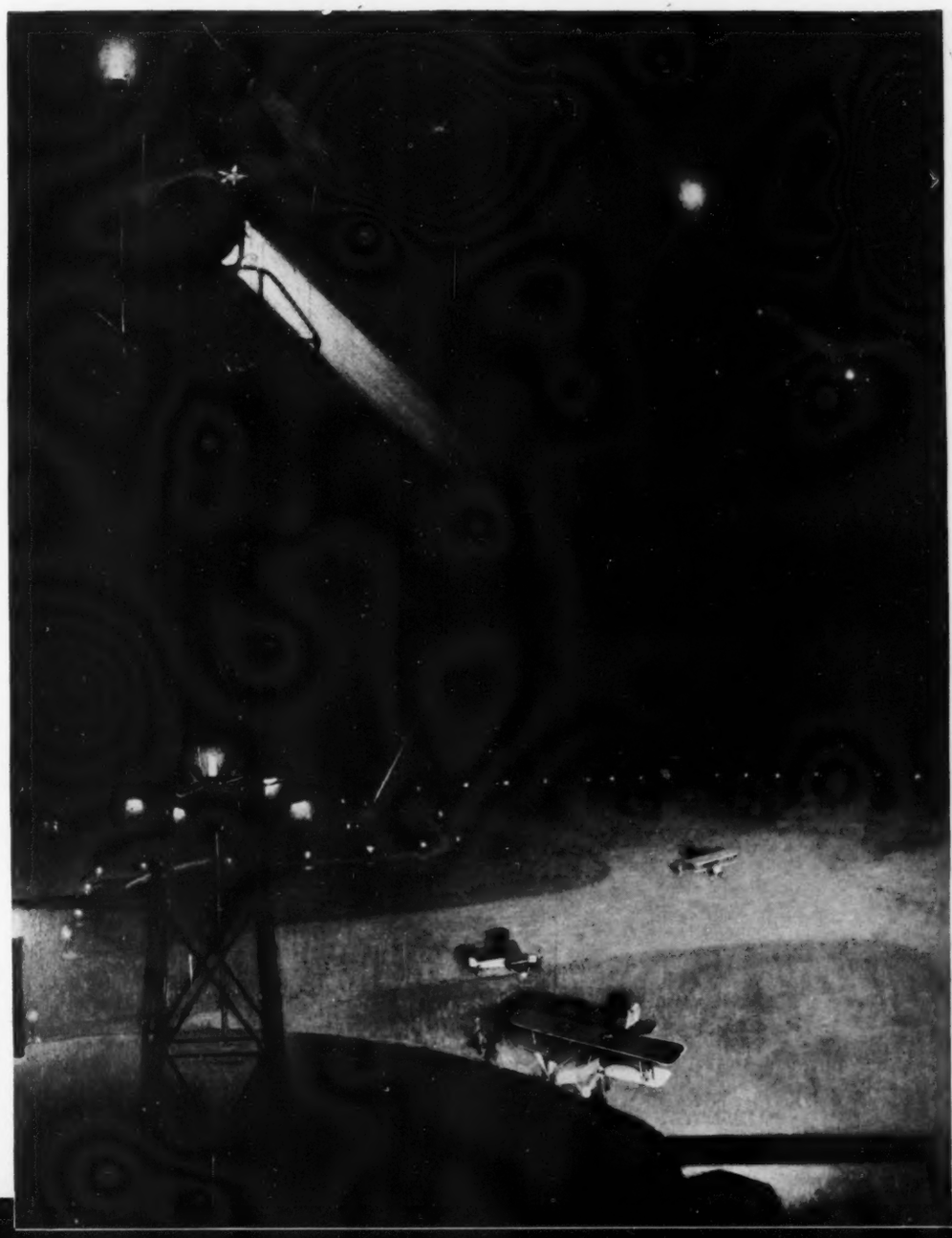


Courtesy W. D'A. Ryan

Every city has its statuary and monuments which can be made beautiful at night—General Sheridan Monument, Albany, N. Y.

Outline lighting can be used to bring out the artistic curves of bridges and produce beautiful reflections in the water

Herbert Photos, Inc.



Night air derbies will doubtless constitute a spectacular sight in the vicinity of most aviation fields

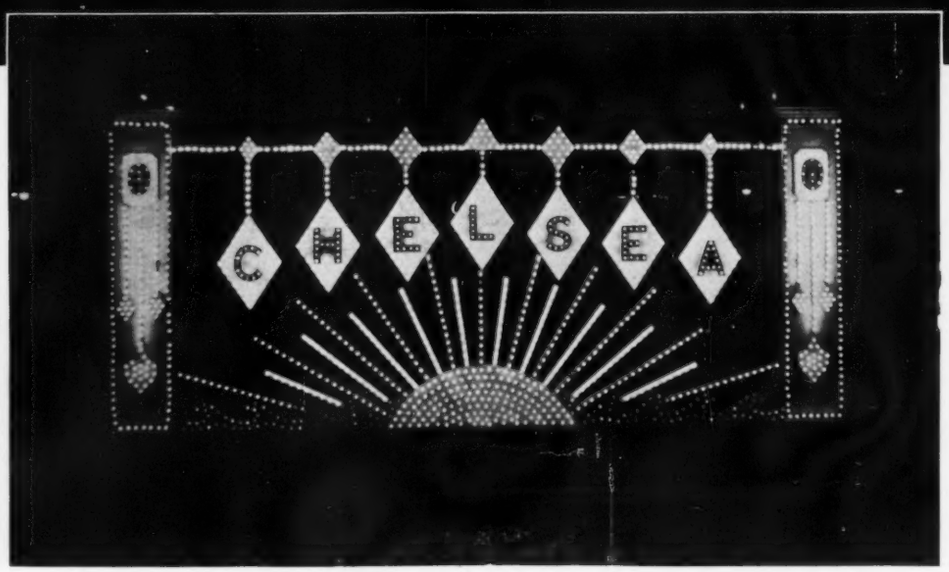
Various ways of lighting building exteriors were shown at Atlantic City during the N.E.L.A. convention

Atlantic Fotos

Atlantic Photos

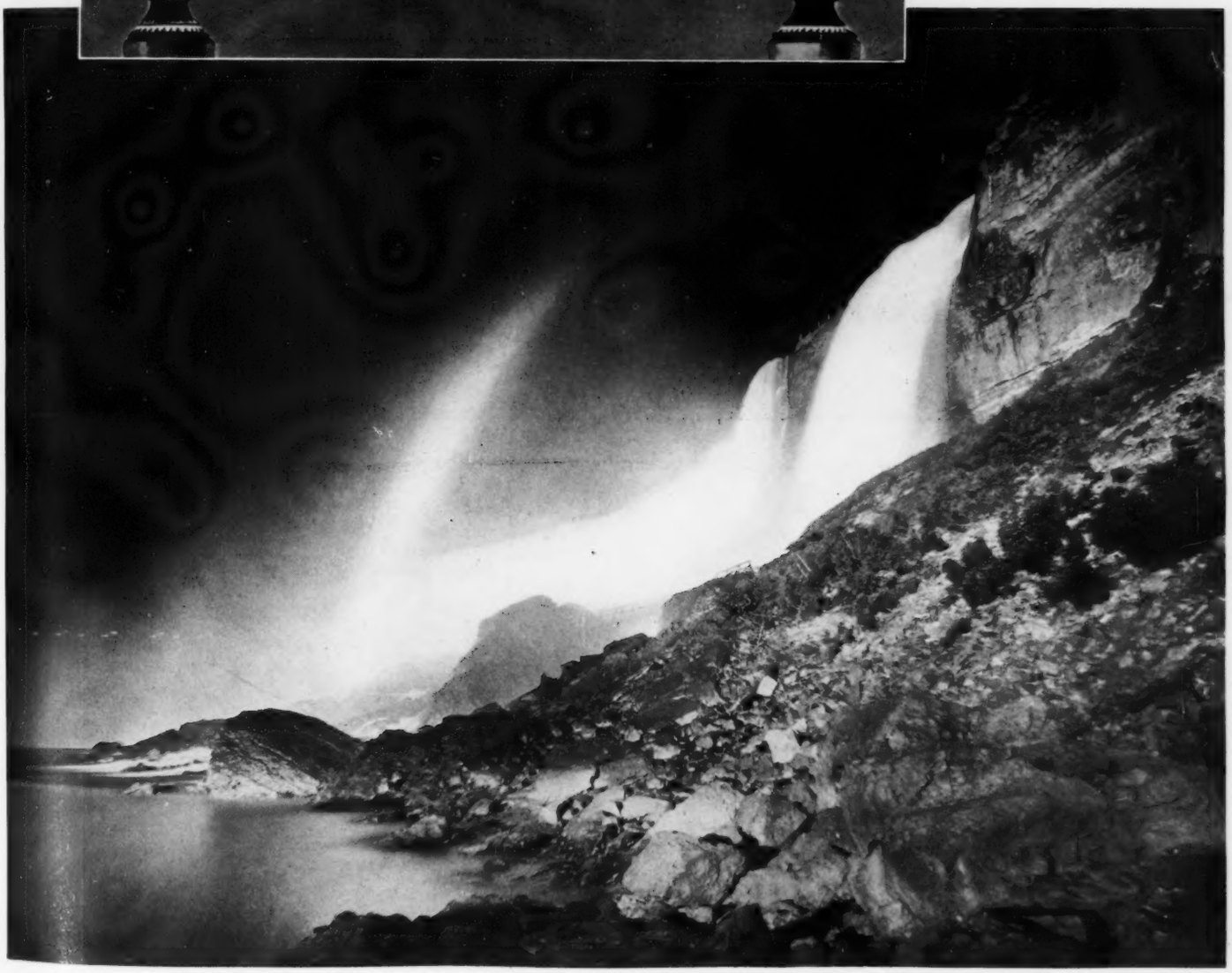
A combination of cove, applique, festoon and strip lighting — Ambassador Hotel, Atlantic City

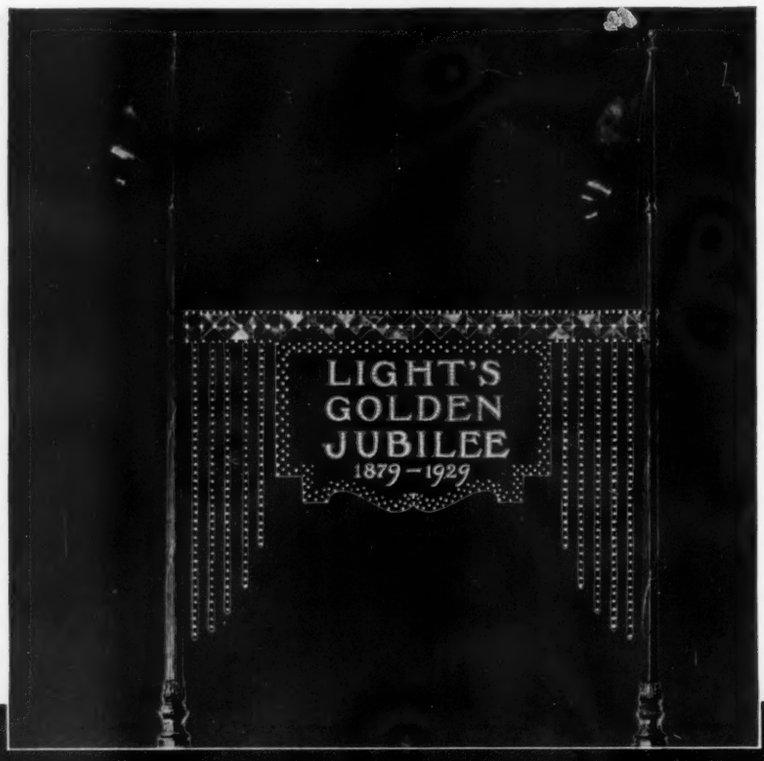
Private and municipal fountains permit a variety of illuminating effects— Du Pont fountain, Wilmington, Del.



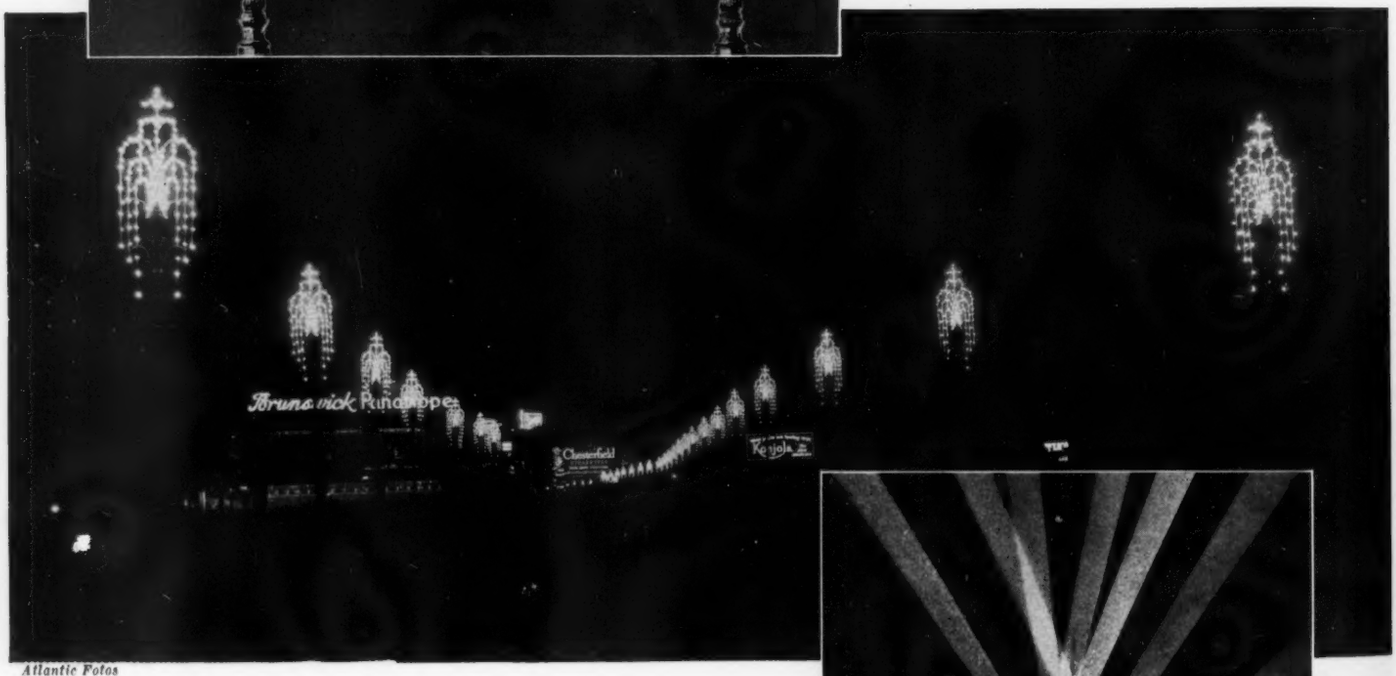
Applications of combined strip and pattern lighting are limited only by the ingenuity of participators in Light's Golden Jubilee

There is only one Niagara Falls, but any waterfalls readily accessible to the public can be made attractive at night





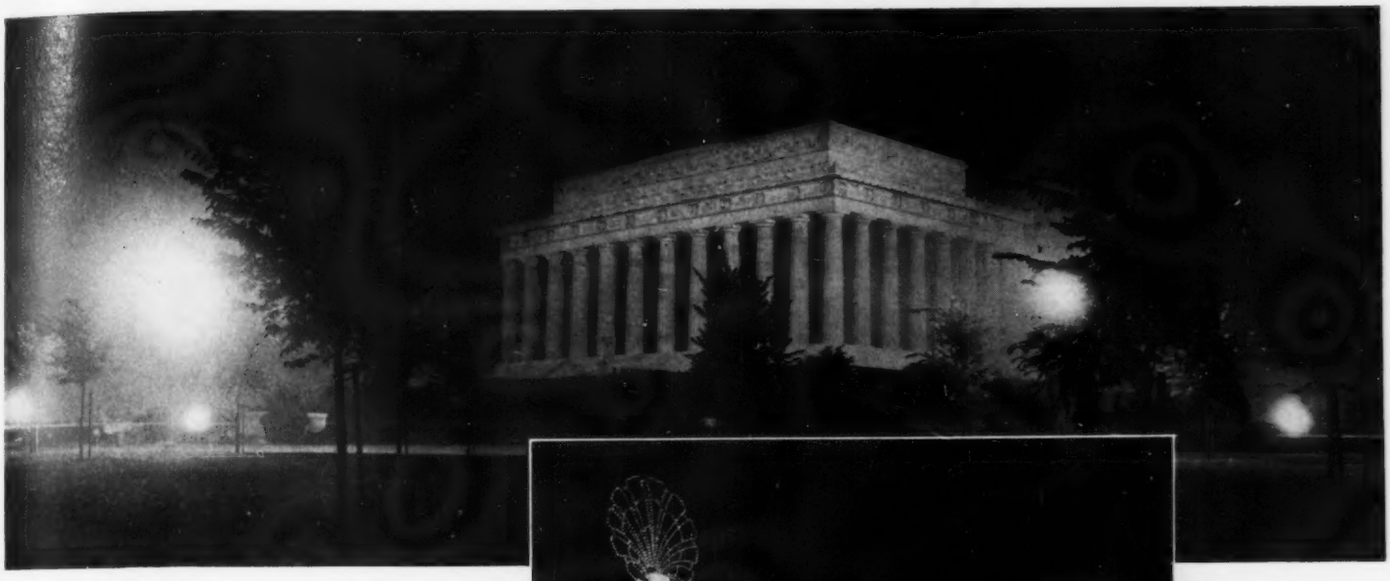
Golden showers are readily substituted for ordinary street lamps on Atlantic City's Boardwalk



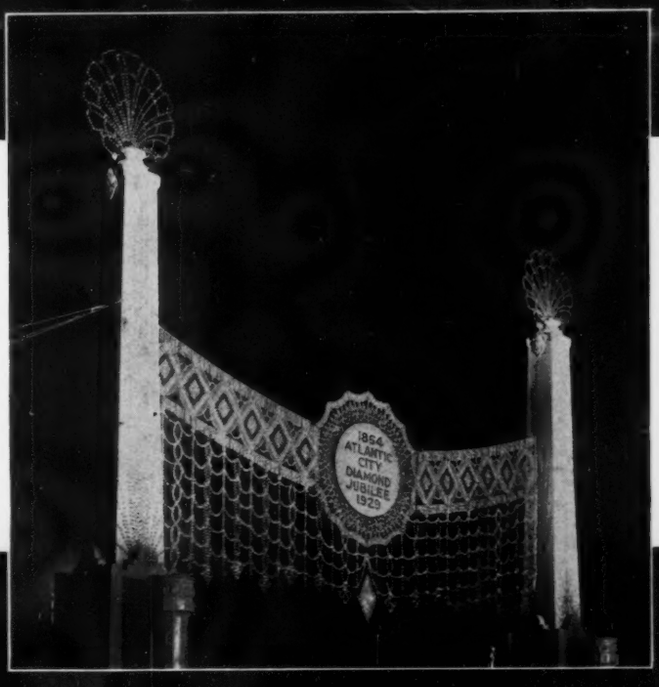
Atlantic Fotos

Banks of scintillators on one or several strategically situated buildings will attract attention to the zone of celebration—Union Trust Building, Detroit

Courtesy W. D'A. Ryan



Buildings' can be made the centers of attraction by use of flood or mobile color lighting



Jeweled arches, lighted by arc projectors, present many changing colors when agitated

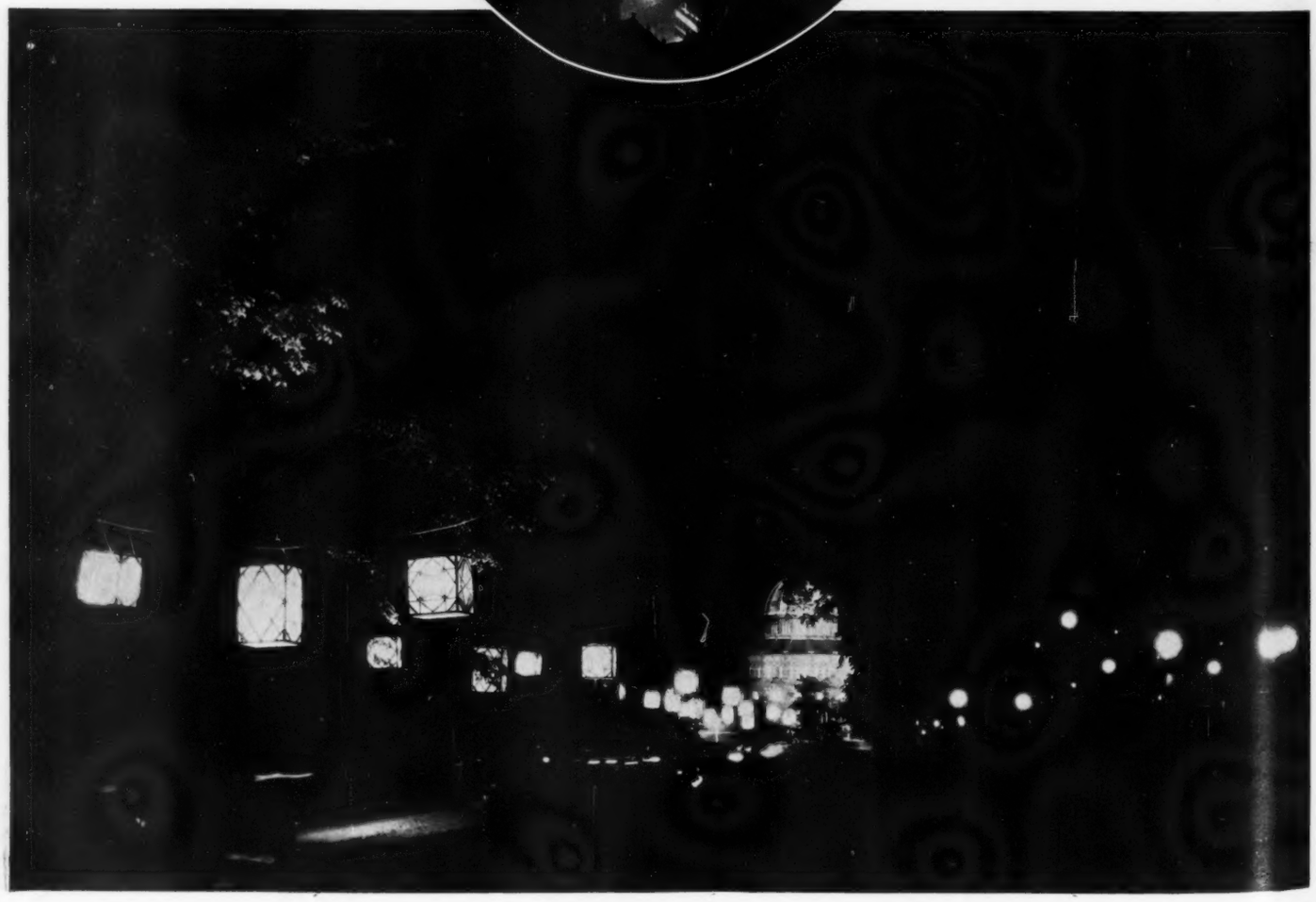
ELECTRICAL WORLD

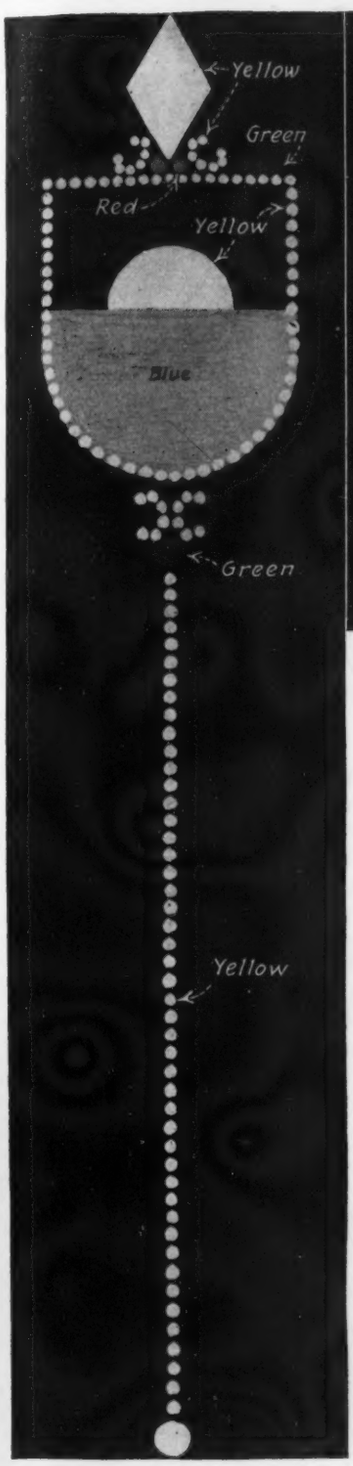
Automatic control of both color and water pressures produce attractive fountains

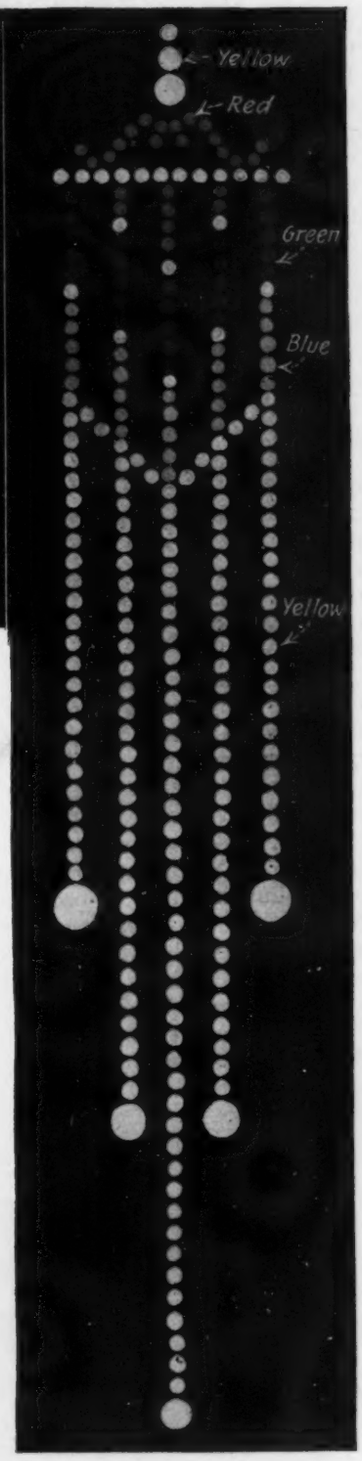
Courtesy W.D'A. Ryan

Such architecture affords an opportunity to blend several colors of lighting—Paramount Building, New York

By varying the types of decorative inclosures parks need have no monotony of appearance at night—Union College, Schenectady, N. Y.







Combinations of Plaques and Streamers that Might Be Used

Two designs are shown, worked out in four colors, yellow, red, blue and green.

Building Face Designs

By G. R. LaWall

National Lamp Works, Nela Park, Cleveland

MOST striking effects can be obtained by developing attractive illuminated designs for building faces. Such jobs generally require the services of a high-grade sign manufacturer. The accompanying illustrations show a few of the beautiful effects that may be obtained and the details of the construction of one of the combination illuminated plaques and vertical festoons is shown in detail.

The long pendants or streamers, including the wires and sockets connected up, may be purchased from manufacturers with either a 4-in., 6-in., 8-in. or 12-in. spacing of sockets. The cost of these strings in this manner is practically no more expensive than the wire and the sockets alone, allowing a very small charge for the work of connecting.

The plaque and streamer shown in the design is constructed of sheet metal fastened to the building face by means of small expansion bolts. The streamers are held in position by the use of two vertical cables anchored and made taut by use of a turnbuckle. The streamer itself is taped to the steel cables.

The plaque face is of sheet metal and may be painted with brilliant colors, according to the design adopted. The lamps may be either boxed in by metal strips or left exposed, depending on the type of effect desired. By choosing frosted or clear types of lamps for different parts of the design and with different colors various effects may be obtained.

The accompanying picture of a

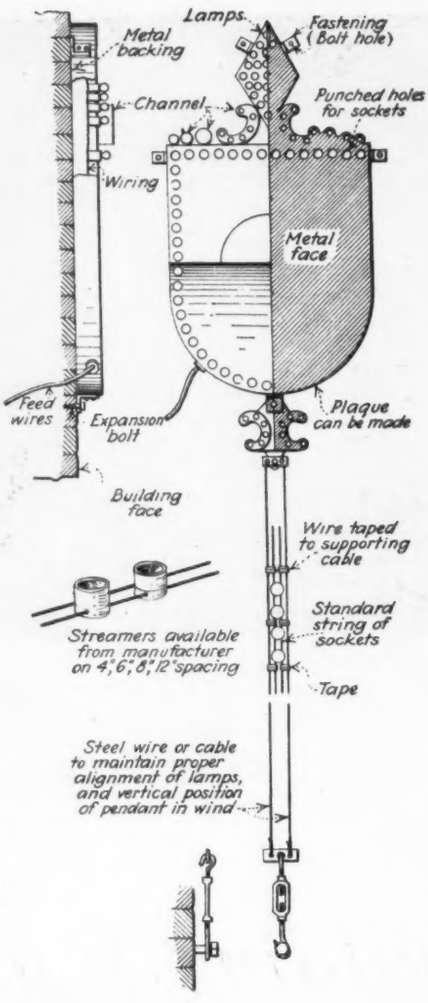
building exterior illustrates several types of effects that may be obtained by the use of streamers and plaques. It shows one design on the side of the building, another with single pendant on the face and on the left wing a new type of corner illumination design that is very effective. At the top of the right wing an artistic building outline is illustrated which can be used effectively if the design of building offers an appropriate sky outline.

No one building would carry such a combination of designs. The different types are shown to illustrate the different possible effects only.

The drawing reproduced shows the details of construction of a combination plaque and streamer. The plaque is metal faced and can be constructed on a metal or wood backing, depending on whether the sign is considered as a permanent addition or not.

This particular plaque uses a combination of standard lamp sizes and the new S-11 lamp, which, with the small base, makes it possible to bank them solidly together with the globes practically touching. The design should be worked out carefully by sketching on a drawing or photograph of the building face in order to determine the most pleasing position and length of the various pendants to be used.

If this work is artistically done it produces a pleasing effect during the daytime as well as at night, with only a reasonable cost of construction and operation.



Pendant Designs Are Easy to Construct

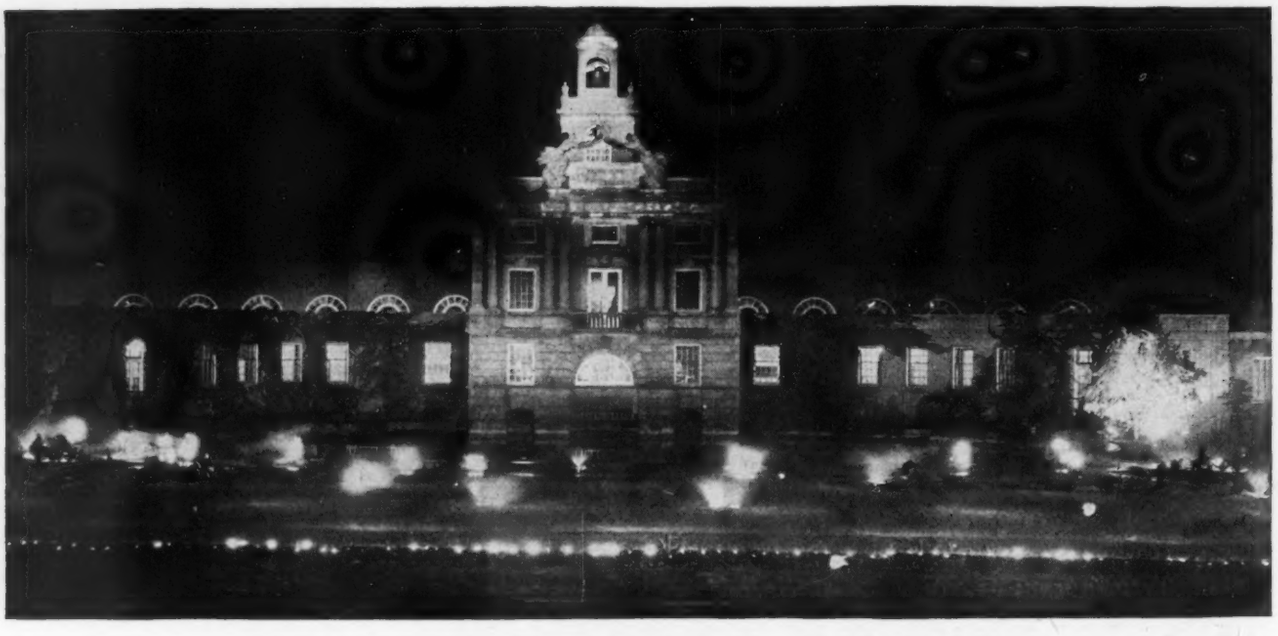
They must be artistically placed, firmly constructed and anchored.

Colored Sprinkler Lights

MANY lawns are equipped with underground sprinklers which furnish an excellent opportunity for a very simple and attractive color treatment. For temporary work an ordinary deep tin pan purchased at Woolworth's will suffice. Cut a hole in the bottom of it large enough to put over the sprinkler head. Use an ordinary weatherproof socket and either a 50-watt white or colored light.

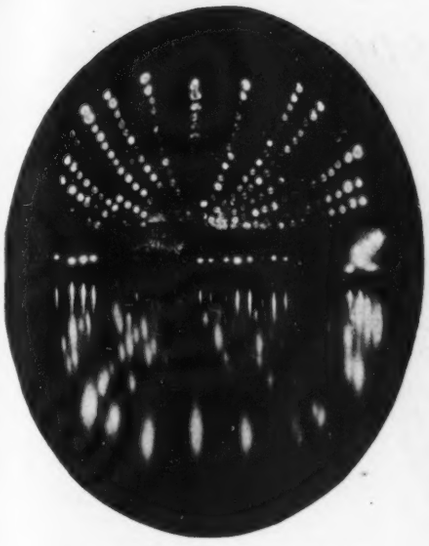
Allow the lamp cord and light to hang over the upper edge of the pan so that it will not be subjected to quite so much moisture and the hole in the bottom of the pan around the sprinkler head should be large enough to allow the water falling in the pan to drain away. It isn't necessary to place the pan over the sprinkler head, it can be laid to one side of the spray.

The amount of illumination depends upon the effect desired. Fifty-watt lamps gave excellent results in the installation shown below, in Nela Park. The illustration shows about twenty of these sprinklers in operation. The ones that show faintly in the picture are the colored lights, which were beautiful but not of such actinic value to be photographically effective.



Irrigation Sprays Illuminated on Lawn in Nela Park

Toy Balloons Illuminated

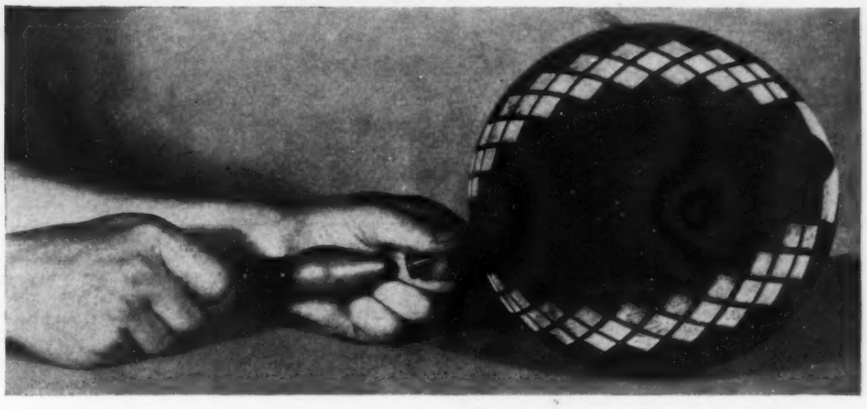


Illuminated Toy Balloons Used in Cranford, N. J., Water Carnival

ONE of the most spectacular and at the same time simple decorative schemes can be obtained by inserting a miniature lamp into an inflated toy balloon. The method of doing this is illustrated in the accompanying view. The balloon is first inflated and then after wetting the surface of the electric light bulb to act as a lubricant the bulb can be easily forced into the balloon without an appreciable loss of air. With a little practice this work can be done very rapidly.

The bulb itself acts as a plug so that no further tying of the balloon neck is necessary. Either the miniature pear-shaped lamp or the similar shaped lamp in the intermediate base can be used. A 10-watt size lamp is sufficient to light up the ordinary sized balloon, giving it great decorative possibilities.

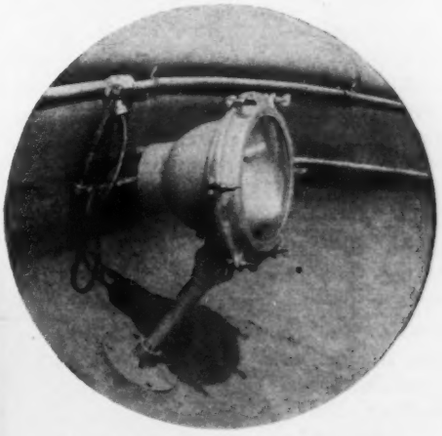
While a frosted lamp may be used, a clear, smooth surface lamp slips into the balloon more easily. The balloon neck should be brought over the top of the lamp, just leaving the base exposed. This can then be screwed into the socket after the string has been put in place. Decorations of this type are as pleasing in the daytime as at night.



Miniature Lamp Should Be Moistened Before Inserting in Inflated Balloon

Memorial Lighting Requires Care in Layout

FLOODLIGHTING of Thatcher Memorial in Denver's city park proved unsatisfactory due to glare in motorist's eyes and has just given way to an installation of nine projectors mounted in the rim of a surrounding pool of water. Mounting of the floodlights and the night effect produced are shown in the accompanying illustrations.



Method of Mounting Under-water Floodlighting Projectors

Nine FDV-12 Crouse-Hinds underwater projectors with 500-watt lights were used. The complete installation cost about $1,000. Lighting of this memorial suggests a possibility for a permanent civic improvement that might be undertaken and dedicated during Jubilee Week.

Floodlighting a Memorial by Projectors Mounted in Surrounding Pool

Every Statue Affords an Opportunity

FLOODLIGHTING the celebrated statue of the "Minute Man" at Lexington, Mass., was accomplished by the Edison Electric Illuminating Company of Boston at a first cost of about $1,000. One 1,000-watt and three 500-watt projectors are used, each being mounted about 100 ft. away from the statue. After this installation was completed it was turned over to the town at a nominal charge for use as a permanent exhibit.

It is expected that many floodlighted statues and electric fountains will be illuminated for extra periods by way of celebrating the Edison anniversary, at first costs of from two or three hundred dollars up, in many parts of the country.

Show Window Display for Electrical Store

By E. W. COMMERY

SHOW window displays throughout the country offer one of the most attractive methods of celebrating Light's Golden Jubilee. The window illustrated has been designed as an example of what may be done in a small window of many electrical or contractor-dealer stores to participate in the celebration and testimonial to Thomas A. Edison.

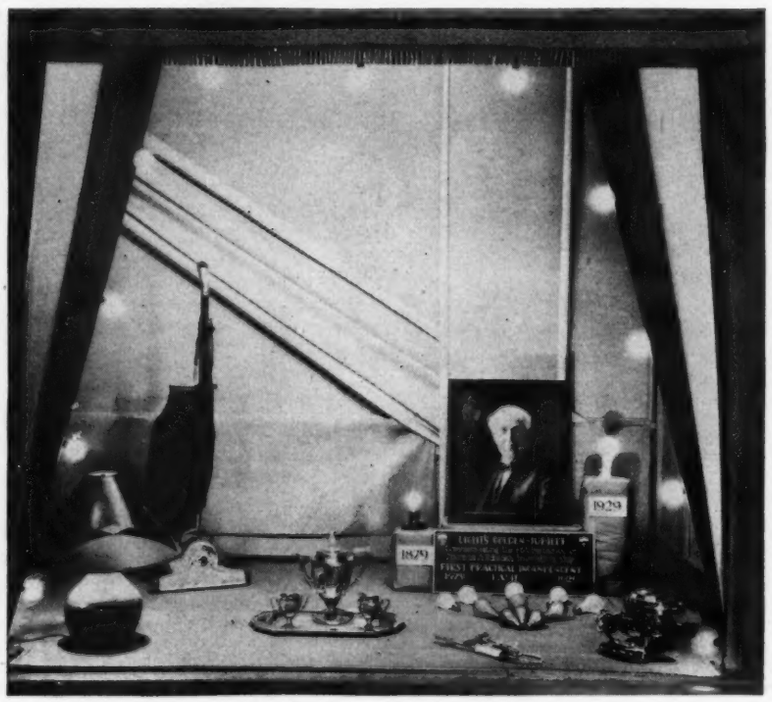
The decorations involved are practically all made from crepe paper. At the glass there are three bands of crepe paper on each side, a vertical band of dark amber (Dennison No. 63), the center band of light amber (Dennison No. 61) and the inside band of Delft blue (Dennison No. 57). Around the inner edge of this border are set eleven S-11 type lamps, amber orange in color, wired on typical strings used for decorative purposes and for sale by many manufacturers and jobbers.

The background of the window is also constructed of crepe paper. The band shown in the picture at an angle from the upper left to the lower right is constructed with the center strip of the dark amber paper with the rolls on the side forming the borders of Delft blue. The vertical band behind the portrait of Thomas Edison has a center strip constructed of dark amber with the rolls in Delft blue.

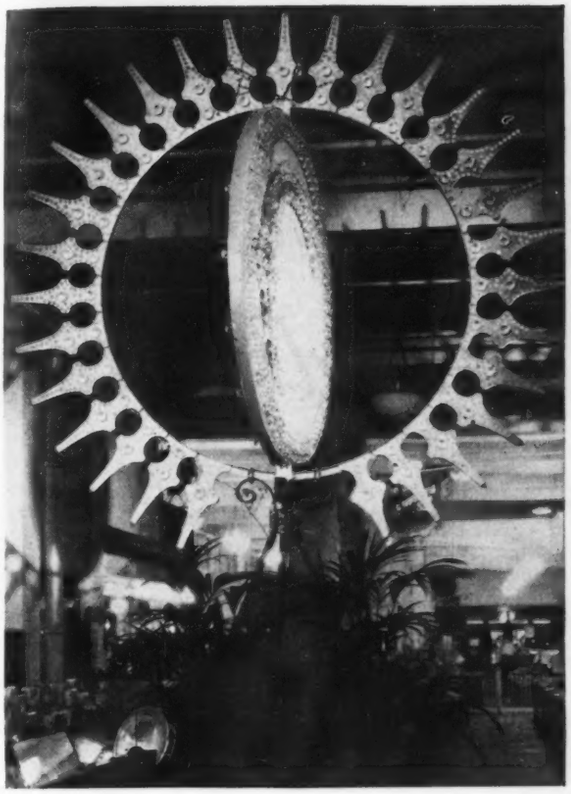
The three boxes used in the display, are covered with the dark amber crepe paper. The floor is covered with dark amber paper with a narrow scalloped border in Delft blue.

The window is lighted through the regular system of overhead lights with a concentrated type of spotlight focused on the portrait. A replica of the original lamp, which may be obtained from any of the principal lamp companies, is shown to the left of the portrait with the model of the newest type of inside frosted lamp shown just to the right.

It is obvious that the expense involved is negligible. The suggestion is offered as a type that will make the public cognizant of the celebration. The material required is 16 rolls of paper, a picture of Edison, a replica of original lamp and some merchandise from stock.



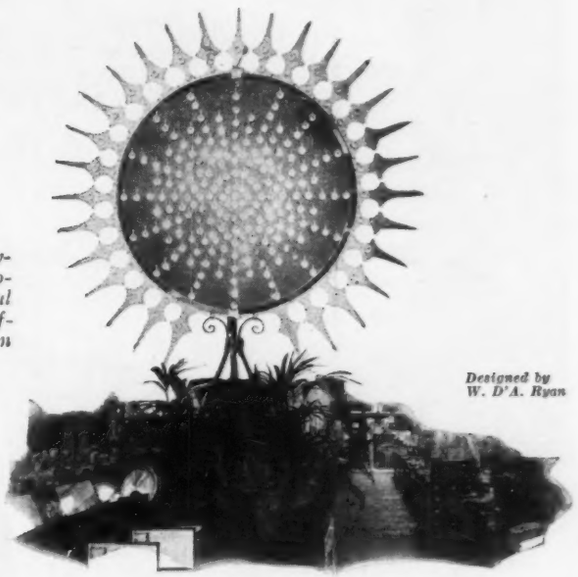
A Simple Window Display that Carries the Jubilee Spirit



Jeweled Medallions for Interior Work

A device such as used in the Carl store, Schenectady, makes a very beautiful decoration to be mounted in a spectacular place in a store and would make an excellent piece to be erected near a jewelry department.

By rearrangement of the jewels and re-covering of the disk it is quite possible to arrange for different types of decorations for different purposes. This illustrates a beautiful and novel effect possible for store interiors.



Revolving Jeweled Disk Producing Beautiful Scintillating Effect When Floodlighted

Designed by W. D'A. Ryan

RECENTLY the Carl store of Schenectady, N. Y., developed a beautiful scintillating effect, as shown by one of the accompanying illustrations. This consisted of a large disk 5 ft in diameter so constructed as to revolve on a vertical axis at a slow speed of three revolutions per minute. On the face of each side of the disk, which is constructed of laminated wood and covered with velvet in appropriate colors, are hung specially cut glass jewels. Both faces of this medallion are illuminated by concentrated floodlights, and if direct current is available it is more effective to use arc spotlights that cause the jewels to sparkle in a very attractive manner.

The jeweled tower effect was first used by W. D'A. Ryan at the World Fair in San Francisco and since then has been used for many beautiful effects, both interior and exterior. The jeweled arch designed and erected by Mr. Ryan across the Boardwalk at Atlantic City is the most recent application of this design and is illustrated.

Tower of the Republic Bank of Dallas,

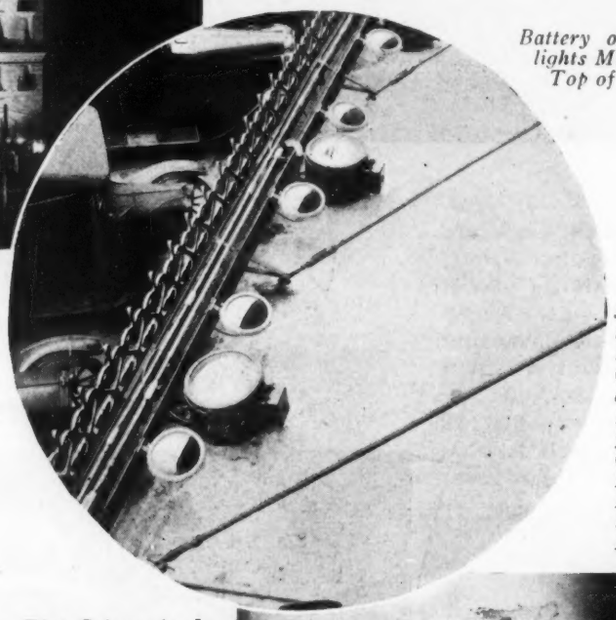
decorated with 750 ft. of Claude Neon tubing of natural orange red light with one row of blue tubing around the balcony. Installation by Claude Neon Federal Company of Dallas, Tex.

Spectacular Color Floodlighting

A Utility Floodlighting Job

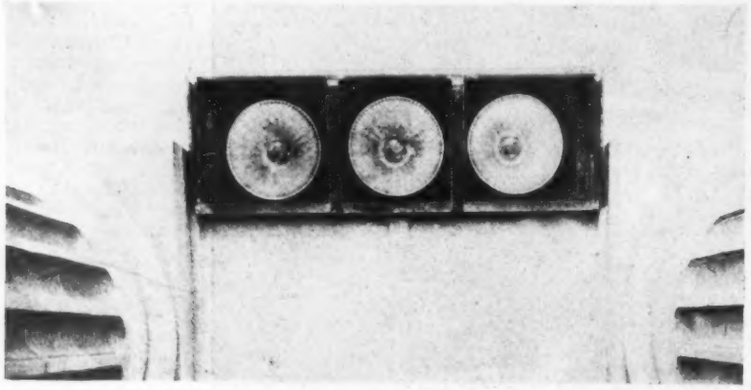
The illumination scheme is indicated by the following data: Sign, 17 kw.; towers, 0.5 kw.; roof corners, 2.0 kw.; promenade, 5.5 kw.; caldrons, 5.25 kw.; tenth floor face, 4.5 kw.; eighth and ninth floor spandrels, 24.6 kw.; marquee floors, 12.75 kw.; total, 72.10 kw.

A STRIKING example of the commercial and decorative possibilities of color floodlighting is to be found in the lighting of the office building of the San Joaquin Light & Power Corporation, Fresno, Calif. Forty-eight color schemes may be produced by three banks of concealed floodlights, the first bank consisting of 84 projectors mounted on the roof of the marquee above the first floor; another row of 112 projectors which light the colonnade above the eighth floor, and a third bank of 21 projectors on the tenth floor illuminating the promenade. On

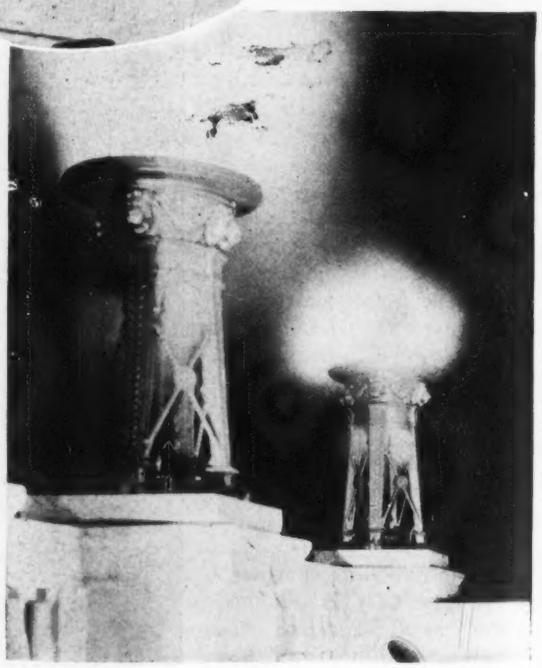


Battery of Floodlights Mounted on Top of Marquee

Steam Picks Up the Colored Light in the Caldrons, Producing a Weird, Flame-like Effect. Below the Columns Are Flood-Lighting Projectors Illuminating the Promenade

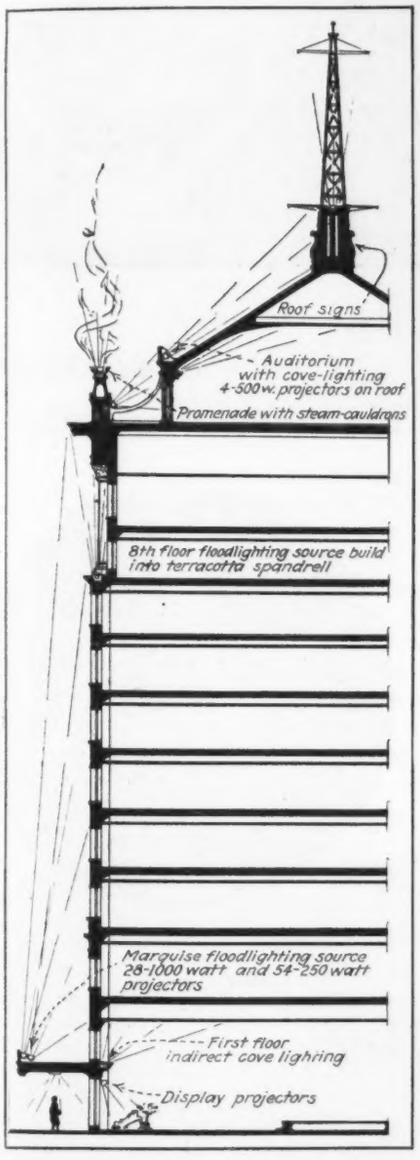


The Colonnade Is Illuminated by 250-Watt Lamps in Groups of Three Placed Between Columns in Concealed Cases Covered with Weatherproof Glass.



the promenade floor level are 21 steam urns which flame with color.

The architecture of the building is divided into three distinct exterior components, lending itself to numerous lighting combinations and effects. The total connected load in floodlighting is 54 kw. and the operating cost varies from $3.76 for three hours to $9.36 for the same period. This includes steam used in producing the most elaborate effects and energy computed at the company's prevailing commercial rate. Several of the details of the installations are shown in the accompanying illustrations.


Roof signs
Auditorium with cove-lighting 4-500 w. projectors on roof
Promenade with steam-cauldrons
8th floor floodlighting source build into terracotta spandrell
Marquise floodlighting source 28-1000 watt and 54-250 watt projectors
First floor indirect cove lighting
Display projectors

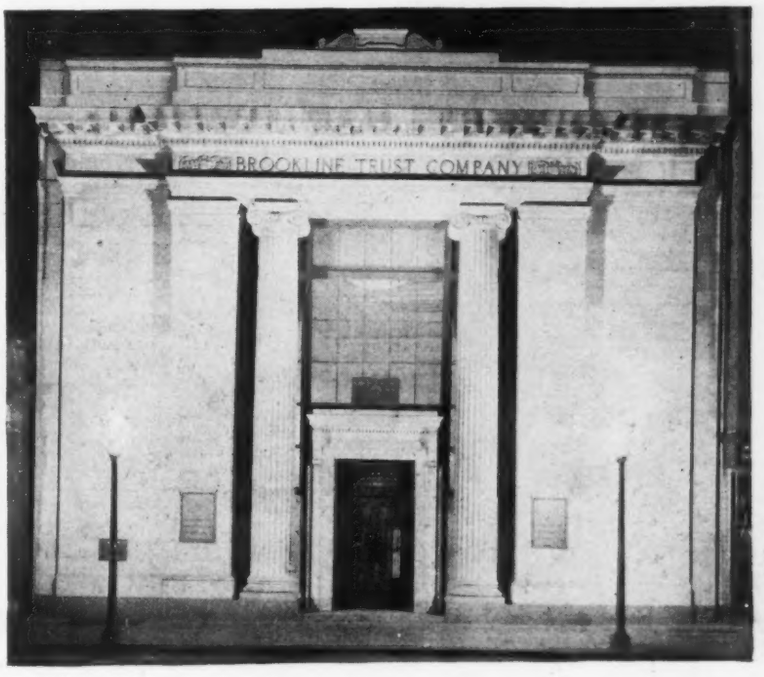
Cross-Section of Building Showing Floodlighting Arrangement

Philadelphia Electric Tower

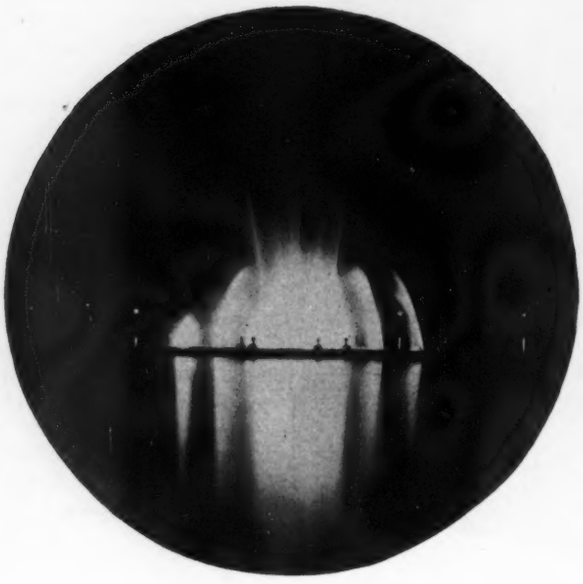
FROM the standpoint of color floodlighting, the treatment of the recently constructed Philadelphia Electric Building, in Philadelphia, Pa., is a beautiful and artistic example. While the lights are arranged to change over a period of several minutes, comprising a complete cycle, a typical and beautiful color combination is one that throws the upper lighted portion of the building in a deep red, while the sides of the lower tower section are bathed in green light and the long flat corners in a rich blue.

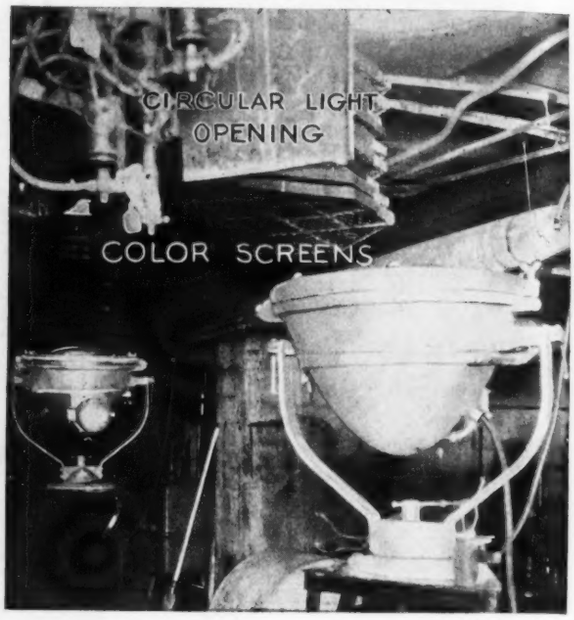
Example of Mercantile Floodlighting

THE Brookline (Mass.) Trust Company building, which has 80 ft. frontage and a height of 60 ft., is illuminated by two floodlight lanterns, each about 12 ft. above the sidewalk, and containing one 1,000-watt lamp for special service and one 300-watt lamp for regular service. Installation cost, including units and standards, about $275.



Changing Colors Enliven a Fountain



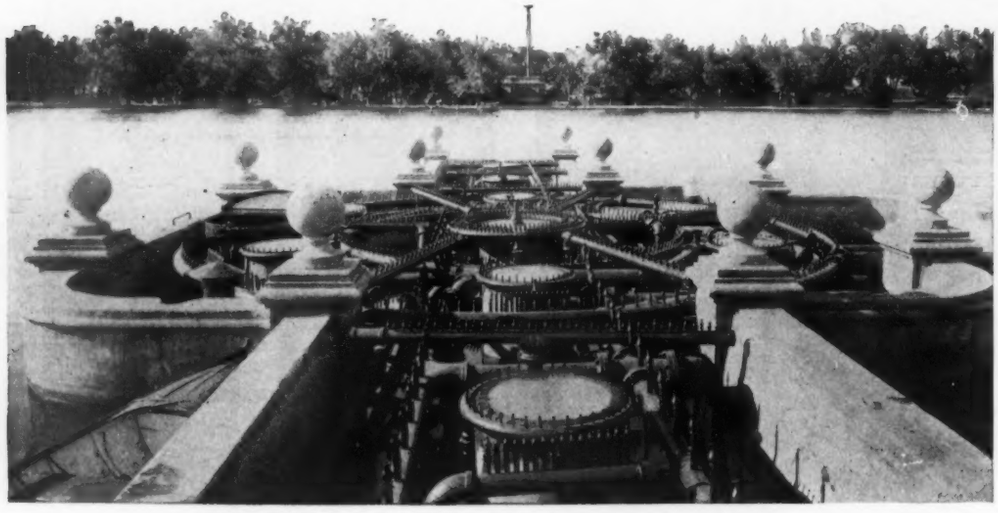


Water Jets and Circular Light Openings

ONE of the few color-lighted fountains in the country with varying color patterns and designs is that in the center of a lake in Denver's city park. Eleven projectors, each having nine variable color screens, animate the spray from the jets with a flood of color, presenting a night spectacle that attracts many of the city's residents in summer.

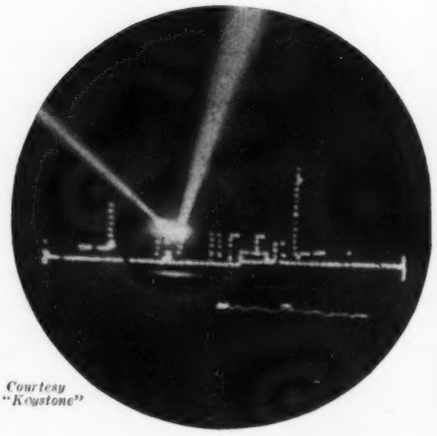
The projectors are of the G. E. L-24 type, supplied with PS 52, 1,500-watt lamp mounted as illustrated to send a vertical beam of light through the plate glass water seals to the spray above. Just above one of the lights may be seen the nine color screens, which are air actuated and electrically controlled from a shore tower. A 220-volt, three-conductor cable furnishes current for the floodlights through autotransformers as well as for a 15-hp., three-phase pump motor.

The present floodlighting installation recently displaced some old 500-volt, d.c. arcs which proved unsatisfactory after several years' service. The new projectors cost $110 each and the entire electrical installation, exclusive of pump, represents an investment of approximately $5,000.



Projector Mounting and Automatically Changing Color Screens

Where Watercraft Are Available



Courtesy "Keystone"

OUTLINE lighting combined with searchlights affords an effective means of celebrating noteworthy events by watercraft of all kinds. A destroyer loaned by the U. S. Navy for the purpose contributed in this way to a recent convention of the Illuminating Engineering Society at nominal cost. The Golden Jubilee of electric incandescent lighting might well be commemorated along these lines where naval and private vessels are available and may be led to participate in the Edison anniversary. The regular equipment and personnel of naval vessels can be employed to advantage in this kind of ornamental illumination.

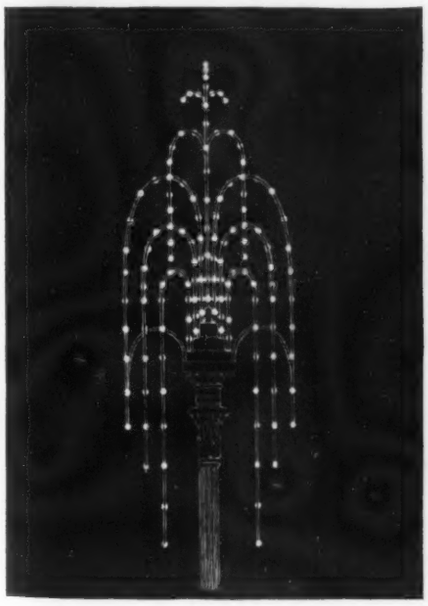
Window Display for Electrical Dealers

ONE of the windows in the central-station store at the Westinghouse Lighting Institute in the Grand Central Palace at New York has been devoted to a display suitable for similar windows throughout the country, to mark the jubilee celebration.

The color is supplied to the window chiefly by the broad bands of orange silk poplin that radiate toward the window display art panel developed by the Westinghouse Lamp Company, copies of which are available. The only other equipment in the window are a dozen of the replicas of the original lamp of Thomas Edison and the modern 10-kw. lamp, which is the largest commercial size made. The fixtures on which these lamps are supported were made in a carpenter shop in the course of an hour or two, but serve to give a distinctly futuristic tone to the display.

Atlantic City Boardwalk Shower

FORMER visitors to Atlantic City found during the N.E.L.A. Convention, that a surprising spectacular display had been substituted for the usual boardwalk lighting. Some of the details of constructing this new ornamental head, which fitted on the regular lighting standard, are illustrated. In place of the customary ornamental head was a new one, made up of a cast-iron cap to which were bolted ⅜-in. rods bent in the form shown to simulate a shower. On this metal framework were 145 yellow-bulb lamps of the 10-watt S-11 intermediate base type wired in parallel. To simplify the problem of holding the lamps and their circuits in place the wires were taped to the iron framework and coated with silver paint.



Shower Standards Replace Usual Fixtures at Atlantic City

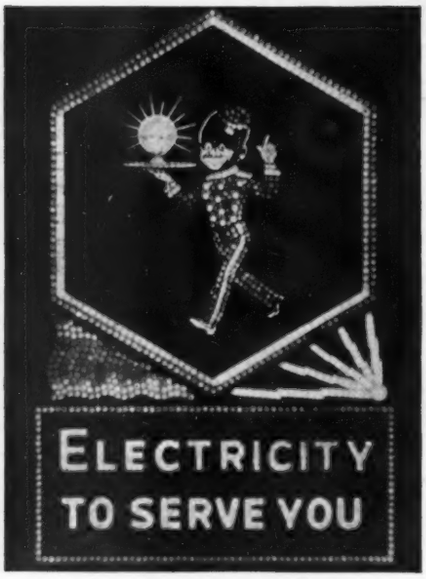
Intermediate base lamp is used and the sockets are connected by taping the wires onto the rods. The lamps are allowed to project beyond the rods in an irregular manner, thus avoiding too precise an arrangement.

The shower is 10 ft. in length from the lowest lamp to the top and approximately 3½ ft. wide. When assembled in this fashion, the question of mounting on the poles is extremely simple. There were a total of 177 standards in Atlantic City equipped in this manner and one gang on a tower truck erected these new standards about as rapidly as another gang could remove the shades and lamps of the old fixtures. The cost of the shower standards as constructed by the Noma Electric Company plus the cost of mounting was approximately $100 a pole. The shower itself was designed by W. D'A. Ryan.

1,500 Watts Lights This Monument

TEMPORARY installation of floodlights at Dorchester Heights monument in Boston. Monument 36 ft. square x 125 ft. high. Three 500-watt floodlights used on poles about 40 ft. from the monument and about 20 ft. above ground. Approximate total cost of equipment and installation, $250.

Modern Type Sign



THE recently adopted electrical sign used by the American Gas & Electric Company is an excellent example of the use of the new S-11 lamp. The secret of using these lights to gain the soft color effect is to take advantage of the characteristic of this lamp and base and place them very close together. A sign of this type requires the design of an artist and the skill of a reliable sign builder and represents the modern type of sign for decoration and usefulness.

No more creditable way of gaining a permanent jubilee effect can be found than by bringing up the standard of sign lighting in our cities.

This sign was designed by G. R. LaWall of the National Lamp Works, Nela Park, Cleveland.

Gold Dye Dip for Street Lights

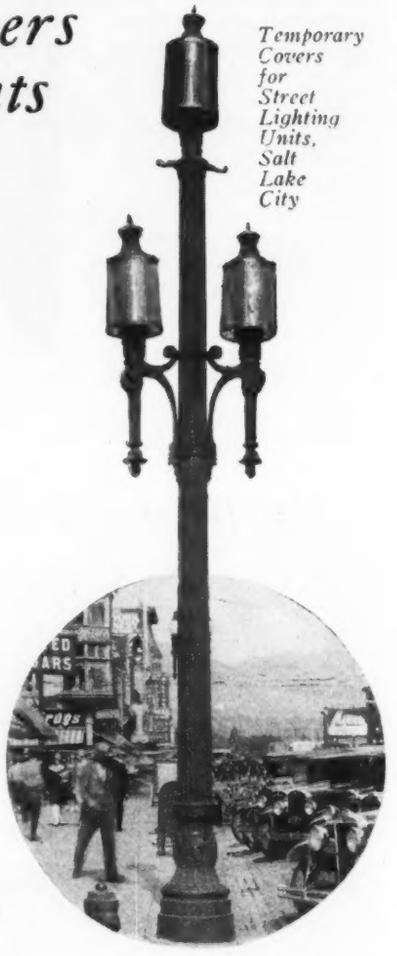
THIS being the 50th anniversary, gold color will predominate. Existing street-lighting systems can be given the jubilee note with but very little expense, as yellow gelatine dye can be obtained cheaply and the existing street-lighting globes can be dipped in this dye and replaced on the pole by the maintenance crew as they make their rounds to clean and repair the units. After the jubilee period is over the dye can be easily washed off the globes, restoring them to their original condition. If the dye is applied to the inside of the globe by swishing a small quantity around it will be protected from rain. An outside dip, however, has been used successfully in some instances. In order to obtain approximately the same illumination, it is advisable to use a size larger lamp when the globe has been dipped to obtain comparable illumination on the street surface.

Gold colored dyes should be a gelatinous base and may be obtained from national theatrical supply houses, film exchange companies, such as the Universal Stage Lighting Company, the Display Stage Lighting Company, both of New York, their branches or similar companies in other large cities.

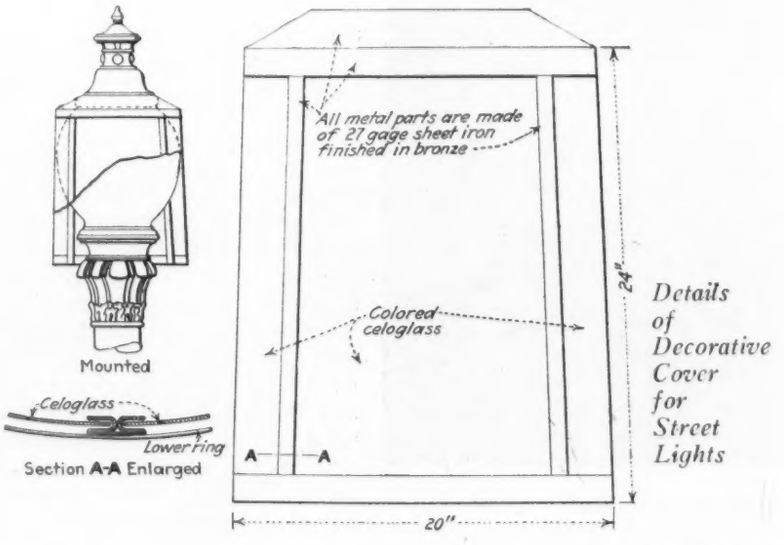
Decorative Covers for Street Lights

STIMULATED by the Christmas festive lighting spirit merchants and the electrical industry of Salt Lake City have hit upon a unique plan for special street lighting upon any occasion that may warrant throughout the year. Metal covers have been made up which are easily slipped over street lighting units as shown in the accompanying illustration. Guides are provided in these covers, as shown by the sketch which retain "Cel-o-glas" screens of any desired color or combination of colors. The "Cel-o-glas" screens are slipped in from the lower end of the covers and may readily be changed.

The covers are easily installed and removed and are used by the merchants on any special occasion during the year. They cost approximately $5 each, but since they constitute a permanent investment the Merchants' Association felt that the cost was well justified. A feature of the covers is that they may be telescoped when stored so that a minimum of storage space is required. Assembly details are given in the accompanying sketch.



Temporary Covers for Street Lighting Units, Salt Lake City



Details of Decorative Cover for Street Lights

Digest of Electrical Literature

Hydro-Electric Development and Steam Equipment

Supersaturation in Steam and Its Influence Upon Some Problems of Steam Engineering.—C. F. POWELL.—Supersaturation of a vapor has been defined as the ratio of the actual density of the vapor to the density of the saturated vapor at the same temperature. Theories have been put forward in which it is assumed that steam, in rapid expansion, tends to become supersaturated. If this assumption is correct, the ordinary isentropic heat drop of the steam, in expanding between two pressures, forms a misleading criterion by which to estimate the efficiency of machines such as the steam turbine. According to the author, in order to make an accurate test of the theory it is necessary to know the limiting supersaturation which must be produced in a vapor at a given temperature, before condensation begins. Accordingly in this paper an account is given of some experiments to determine the value of this limiting supersaturation at different temperatures and from the results the true position of the "Wilson line" has been found to correspond closely with the ordinary line of 2 per cent wetness at low temperatures. It is also shown that new data can be included into the calculation of the heat drop of steam in expanding adiabatically and under supersaturated conditions between two pressures. It is also stated that the theory and data may be applied with some confidence to the important problem of flow in the steam turbine, about which there has hitherto been disagreement between theory and experiment.—*Engineering (England)*, June 7, 1929.

Generation, Control, Switching and Protection

High-Voltage Circuit Breakers.—A large Swiss concern has adopted the explosion chamber principle for all oil circuit breakers over 50 kv. and describes in the present paper the features of this series. Following European custom the breakers are equipped with a preliminary resistance step, the resistance being located above the contact tulip, where no carbon or water segregation can reach it. The explosion chamber is made of a short cylinder of bakelized paper, capped on top and bottom with a metallic end. Indoor breakers have condenser type bushings, while outdoor breakers have oil-filled porcelain leads. The design of the breakers avoids carefully all horizontal insulating surfaces, upon which carbon and sludge would be liable to collect. For remote operation two principles can be chosen from, either direct motor operation or spring operation with motor power accumulation in the spring. The direct motor operation with series a.c. motor is somewhat complex, in an endeavor to introduce a number of safety features, such as, for example, a magnetic clutch to avoid shocks in closing. As a consequence two motor wires and five control wires are necessary between the breaker and the control switch on the board.—*Bulletin Oerlikon (Switzerland)*, May, 1929.

Rotary Condensers. — P. SIDLER. — Two largest rotary condensers built in Europe were recently installed in the Japanese substation Yao near Osaka, to provide necessary regulation of a 200-mile, 154-kv. transmission line. At the substation three transformer banks of 60,000 kva. each are installed, to reduce the potential to 77 kv. with a delta tertiary winding of 11 kv. for the supply of the two 30,000-kva. condensers. These machines weigh each 140 tons and operate at 600 r.p.m. for 60 cycles with twelve-pole rotors. For under-excitation at 25,000 kva. practically no excitation current is required. Since it would be difficult and uneconomical to reduce the output of the main exciter to practically zero, a second auxiliary exciter is on the shaft of the set for the excitation of the exciter. This lessens the cost and greatly reduces losses. A 3,000-hp. starting motor brings the machine to synchronous speed. A detailed description is also given of the complete control equipment of this important Japanese station. It is planned to augment the installation by two more banks and three more condensers of same capacity in the near future, giving a total of 300,000 kva.—*Brown, Boveri Mitteilungen*, June, 1929.

Heating of Transformer Coils.—F. STECKLER.—The author maintains that oil in horizontal cooling ducts between disk coils on transformers does not dissipate the generated heat by an oil flow, and that the center part of the oil in the duct is stagnant and does not carry heat away except by slow conduction. Consequently, the inner parts of the disks will be much hotter than the designer assumed and are liable to cause hot spots and sludge. The article goes on to give an exact mathematical method of heat calculation on the above assumption for what the writer calls a correct design of disk-wound transformers of 150 kva. and more. Hitherto customary practice of modern design, here as well as abroad, with cooling ducts of not less than $\frac{1}{4}$ in., and moderately wide disks, does not agree with the author's assumptions, a fact which can be and has been definitely established by very accurate heat measurements in the ducts. —*Elektrotechnik und Maschinenbau*, May 12, 1929.

Electrophysics, Electrochemistry and Batteries

Effect of Added Impurities on the Breakdown Voltage of Insulating Oils.—As a result of considerable experimental work developed in the investigation of the effect of impurities on the electric strength of insulating oils it is demonstrated that the addition of moisture or cotton or pressboard fiber causes some diminution of the breakdown voltage, while the association of moisture with either of the other two greatly increases the effect. This investigation involves test methods, apparatus and technique, which were especially developed in order to permit the carrying out of the research.—*Journal of the Institution of Electrical Engineers (England)*, June, 1929.

Heat Applications and Material Handling

Meter Testing Station.—P. MAURER.—The large number of installed electric meters in the area of the municipal light and power supply of Paris, France, calls for maintenance, repair and recalibration of many meters per day, for which purpose a new meter laboratory was recently built, the description of which is given in this paper. In addition to being equipped with modern machines and instruments to take care of all types of meters used, a complete line of laboratory equipment is available to carry on related research and testing work. The laboratory is connected to the municipal power supply by a 12,000-volt, two-phase cable and a three-wire d.c. cable. Through a set of 220-kva. transformers a motor-generator is driven, while the direct d.c. supply is primarily used for charging four banks of storage batteries. An elementary wiring diagram shows the general connections between the available machines and batteries. There is also provided a high potential testing berth with transformers for up to 30 kv.—*Revue Générale de l'Electricité*, June 1, 1929.

Miscellaneous

The North-East Coast Exhibition.—In a special supplement to this issue of *Engineering* the numerous exhibits and items of equipment at the North-East Coast Exhibition in England have been described. A number of devices of British manufacture, including multiphase turbine pumps, steam plant equipment, feed-water pumps, air compressors, coal pulverizing equipment and burners, air ejectors, filters, flameproof circuit breakers and similar items, are described. — *Engineering (England)*, May 31, 1929.

News of the Industry

Ward Defers Opinion on the Legality of Merger

"I am prepared to express an opinion as to whether or not the proposals of the Niagara-Hudson company constitute a violation of any state law, but before doing so I would like to have you examine the foregoing report and advise me whether there are any other facts or decisions which you wish me to consider."

In these words Attorney-General Ward of New York State concludes his preliminary report to Governor Roosevelt on the recent merger of the Northeastern Power Corporation, the Mohawk-Hudson Power Corporation and the Buffalo, Niagara & Eastern Power Corporation into the Niagara-Hudson Power Corporation. This report was made on Monday of this week. It is confined to fact finding as to the three holding companies concerned, their subsidiaries, capitalization and rates, and to court decisions with a bearing on such consolidations. No complaints about the merger have been made to his office, the Attorney-General says. Preparation of the report, he remarks, has suggested to him "some desirable changes in the law" which he is ready to discuss with the Governor and the members of the Legislature.

Politics Taboo in New York Commission Inquiry

When the committee appointed jointly by Governor Roosevelt of New York and the Legislature of 1929 to review the state public service commission law met in New York City on Monday, July 15, politics were formally declared eliminated from the inquiry. Colonel William J. Donovan was installed as counsel, and he outlined a proposal for the conduct of the investigation. In the scope of the inquiry Colonel Donovan placed the problem of regulating the public utility holding companies, over which the existing Public Service Commission has no jurisdiction, although it has more than once requested the Legislature to revise the law in this respect.

Mr. Donovan said he planned to question the members of the Public Service Commission and the Transit Commission as to the operation of the present law and remedies for its defects. Views of economic and technical experts will also be sought, and testimony will be taken from practical operators of various utilities as to their dealings with the public and their views of regulatory legislation. In addition, representatives of customers and of the general public will be heard. At the organization session about twenty of those present expressed a desire to give their views when the hearings begin.

Philo's 165,000-Kw. Unit Now in Operation

Official announcement that the 165,000-kw. triple-compound turbo-generator which has been under construction at the Philo generating plant of the Ohio Power Company since March, 1927, has gone into operation is about to be made. This machine, which is of General Electric manufacture, with its boilers, transformers, coal-handling apparatus and auxiliaries, has involved an expenditure in the neighborhood of $17,000,000. With it the Philo plant will have a total rating of 245,000 kw., an initial 80,000-kw. machine having been installed about four years ago. Ultimately, it is expected, the capacity of the Philo plant will exceed 400,000 kw.

Undoubtedly the largest generator ever installed outside of a metropolitan center and rivaling in size the largest in the big city systems, Philo was chosen to house it because that is the load distribution center of the Ohio Power system, chosen for its advantages of water and coal supply. The plant is built on the banks of the Muskingum River. Transmission lines operating at 132 kv. connect it with six states, reaching with their interconnections as far north and west as South Bend, Ind.; as far east as Pittsburgh, Pa., and Roanoke, Va., and as far south as Kingsport, Tenn., and embracing 5,500 miles of line.

Unification of New York City Companies Possible

Creation of a single electric light and power company to serve four boroughs of Greater New York—Manhattan, Brooklyn, Queens and the Bronx—and Westchester County is understood to be under study by the executive officers and engineers of the consolidated companies now serving this metropolitan area. It is predicted that a single electrical company will fuse all of the electrical subsidiaries of the Consolidated Gas Company and will be called the New York Edison Company. Some months, however, are likely to be required in carrying out the proposed unification.

A study of the engineering problems involved in the proposed interconnection of the New York City and Westchester system with the upstate systems now subsidiary to the Niagara-Hudson Power Corporation is also believed to be under way.

Leonard Makes Rejoinder to Superintendent Ross

The suggestion of J. D. Ross, Seattle's superintendent of lighting, that the city condemn the entire holdings of the Puget Sound Power & Light Company within Seattle and consolidate them with the municipal plant (ELECTRICAL WORLD, July 13, page 76) brought forth a pointed rejoinder from A. W. Leonard, president of the Puget Sound company, who said: "My company has not the slightest intention of selling either its distributing system in the city of Seattle or any of its power plants to the Seattle municipal lighting system." He added that he did not believe that the taxpayers of Seattle will take Mr. Ross' suggestion seriously. He agreed wholeheartedly with Mr. Ross' statement that competition in the light and power industry is unsound, uneconomic and causes higher rates, but declared that it is equally well established that private operation is invariably cheaper than political operation.

"I am not surprised," said Mr. Leonard, "that Mr. Ross wishes to add to the city's system some of our power plants, plants that are economically constructed and are capable of being operated at low cost. This is very apparent from Mr. Ross' own statement concerning the Skagit plant before the Municipal League on May 14 of this year, in which he said that this plant had cost the city and the consumers of electrical energy $10,000,000 in excess of what it should have cost. None of the plants of this company which Mr. Ross seeks to acquire is burdened with excess costs.

Besides recommending the purchase of the power company's holdings, Mr. Ross, in his report, recommended an ambitious program of development on the Skagit River. He urges that work now under way at Diablo be speeded with all possible dispatch, because all the power made possible by the new Diablo Dam will be sold in about five years. He also urged the clearing of the Ruby Basin immediately, as this work will require about five years and the full 1,000,000 hp. which can be developed on the Skagit project will, in his opinion, be needed to supply demands for power within the next fifteen years.

Gross earnings of $4,872,637 were reported by Mr. Ross for the Light Department in 1928. This was a gain of $510,894 over the previous year, he said. During the 24 years that the city light department has operated, the report showed, operating revenues have amounted to $42,015,642 and expenses to $19,634,267. Its grand total surplus is put at $9,158,364, of which nearly a million was marked up last year.

New Chairmen for N. E. L. A. Sections

W. R. Emerson to Head the Accounting, A. D. Bailey the Engineering, Harry Reid the Public Relations and M. E. Sampsell Again the Commercial

PRESIDENT SLOAN of the National Electric Light Association has announced the appointment of the four national section chairmen for the administrative year 1929-1930. They are: Accounting National Section, W. R. Emerson, secretary, treasurer and general auditor Oklahoma Gas & Electric Company, Oklahoma City, who succeeds J. F. Ford of the Philadelphia Electric Company; Commercial National Section, Marshall E. Sampsell, president Central Illinois Public Service Company, Springfield, Ill., and Wisconsin Power & Light Company (reappointed); Engineering National Section, Alex D. Bailey, superintendent of generating stations, Commonwealth Edison Company, Chicago, who succeeds E. C. Stone, Duquesne Light Company; Public Relations National Section, Harry Reid, president National Electric Power Company, New York, who succeeds J. F. Owens, Oklahoma Gas & Electric Company.

A brief biography of Mr. Sampsell was printed in the ELECTRICAL WORLD September 1, 1928 (page 431), following his first appointment as chairman of the Commercial National Section, and one of Mr. Reid on February 12, 1927 (page 373), following his election as president of the National Electric Power Company. Both are nationally known figures in the electrical industry, Mr. Sampsell having served as president of the Illinois Electric Railway Association and of the Great Lakes Division, N.E.L.A., and Mr. Reid having been the head of light and power companies in the Middle West, including the Kentucky Utilities Company of Louisville and the Interstate Public Service Company of Indianapolis.

Mr. Bailey, born in Wisconsin in 1882, has lived in Chicago since the age of seven. After his graduation from the Lewis Institute he entered the employ of the then Chicago Edison Company in 1903 as a mechanical engineer at the Harrison Street generating station. Three years later he was transferred to the engineering department of the company. In 1906 he became assistant chief engineer at the Fisk Street station, later being promoted to be chief engineer. On January 1, 1921, he attained his present position. He is the author of numerous articles on electrical subjects. Last year he was a vice-chairman of the Engineering National Section, and he has also served as counselor for the prime movers committee.

Mr. Emerson, a native of Tennessee, was born in 1886 and has been since 1905 associated with public utilities in Oklahoma. Beginning as a day laborer with the Muskogee Gas & Electric Company, he came steadily up through the ranks until in 1917 he was made assistant manager of that company. Later in the same year he was transferred to Oklahoma City and assumed the triple duties he still discharges. He has done much committee work in the accounting branch and served as chairman of the Southwestern Division Accounting Section in 1925-26, becoming a vice-chairman of the national section in the year last named and holding that office up to his present promotion.

COMMITTEE APPOINTMENTS

The national executive committee will contain, besides the president and vice-presidents, treasurer, managing director and secretary, the national section chairmen and the locally elected geographic division presidents, the following members-at-large:

Terms Expiring June 30, 1930.—P. S. Arkwright, Atlanta; D. C. Barnes, Boston; C. L. Collens, Cleveland; H. P. Liversidge, Philadelphia; James R. Strong, New York; Gerard Swope, New York.

Terms Expiring June 30, 1931.—John P. Coghlan, San Francisco; H. M. Edwards, New York; E. M. Herr, New York.

Terms Expiring June 30, 1932.—G. E. Cullinan, New York; E. W. Lloyd, Chicago; Harry Reid, New York (who thus serves in two capacities).

Chairmen of the general national committees have been reappointed with two exceptions—membership and rural electric service. They now are:

Civic Development—J. B. Reynolds, Chicago.
Educational—F. R. Jenkins, Chicago.
Insurance—W. H. Sawyer, New York.
Membership—A. J. Jackson, New York.
Rural Electric Service—Eugene Holcomb, Jackson, Mich.

Chairmen of the special national committees (mainly reappointed) are:

Advertising—(Not yet announced).
Charles A. Coffin Prize—M. S. Sloan, New York.
Codes and Standards—Irvin W. Day, Waterbury, Conn.
Constitution and Bylaws—R. F. Pack, Minneapolis.
Electrification of Steam Railroads—B. I. Budd, Chicago.
Exhibition—E. W. Goldschmidt, New York.
Finance—Sidney Z. Mitchell, New York.
Lamp—Frank W. Smith, New York.
Prize Awards—W. H. Onken, Jr., New York.
Public Policy—P. S. Arkwright, Atlanta.
Rate Research—L. R. Nash, Boston.
Water Power Development—P. A. Schoellkopf, Buffalo.
Wiring Policy—J E. Davidson, Omaha.

Electrification Tests at Barberton Laboratories

Ohio Brass Works Demonstrate Progress in Insulator Practice to Group of Electrical Engineers Concerned with Power Conversion on Steam Railroads

TWENTY-FIVE engineers interested in the electrification of railroads met by invitation at the Barberton (Ohio) laboratory of the Ohio Brass Company on July 11 and 12 to acquire information available there concerning electrification and to exchange ideas among themselves. Demonstrations were necessarily limited to basic principles and a presentation of the possibilities of laboratory investigations. The assemblage was the outcome of the idea that the manufacturers' and the engineers' problems are mutual and that the engineer needs to appreciate the manufacturer's difficulties just as the manufacturer needs to grasp the engineer's.

After an inspection of the indoor laboratory, used for designated tests and to gain information on the operation of electrical porcelain, the party visited the outdoor laboratory, a short distance from the manufacturing plant. Here are erected transmission towers of virtually every type known and of varying heights. A transformer bank is made up of three 750-kva. units mounted on

Marshall E. Sampsell

Alex D. Bailey

Harry Reid

W. R. Emerson

insulated bases with a concatenated connection, so that it is possible to obtain more than 3,000,000 volts at 25 or 60 cycles. A large aërial condenser is connected to the transformer bank and may be charged and then discharged over a large sphere gap which is so arranged that the normal-frequency charging current may be bled off and the instantaneous discharge of the large condenser, referred to as an impulse or impact, can be applied to the structure under test. The majority of the tests are made under impacts with steep wave fronts simulating lightning.

The power plant is in the building at the end of the laboratory. A generator equipped with a series of contacts permits raising the voltage at a predetermined time, and when making impact tests the polarity of the wave can be controlled.

Tests were run on Thursday for the benefit of the engineers on wooden and steel structures equipped with both pin-type and suspension units. The first test determined the relative flashover values of various types of catenary insulation. A series were then shown which demonstrated how to obtain the best insulation value for new transmission lines or improve this value on existing lines. Various set-ups of actual towers and poles were compared. In the evening tests showed the value of balanced design of electrical porcelain.

On Friday morning the group convened in the indoor laboratory to discuss reliability in catenary and transmission insulation. Electrical tests were run at 60 cycles on various types of V-string assemblies. The party was then conducted to the outdoor laboratory, where a special set-up showed a proposed transmission line to be used by one of the Eastern electrification projects in connection with its feeder system. This set-up included conductors which were to operate at a normal voltage of 60,000 and 22,000 single-phase, the lower-voltage conductor to be operated as a balanced wire. Impact tests were made on the conductors with the string in vertical suspension and then pulled in toward the tower at an angle of 15 deg. to the vertical.

Features of New 132-Kv. Underground Cable

After continuous operation without a break in service since August, 1927, the 12-mile, 132-kv. underground cable that connects the Hell Gate generating station of the United Electric Light & Power Company, New York, to the Dunwoodie distributing station of the Yonkers Electric Light & Power Company is being duplicated through the laying of a second cable line of the same voltage. Installation started recently, and the work is expected to be completed in September.

The new cable, which is to give the Greater New York companies added facilities for serving the Westchester area, contains a number of refinements or improvements resulting from operating experience with the older cable. That cable, which at one step doubled the operating voltage for underground transmission, and which, with its hollow core filled with oil under pressure, was a new invention, was shipped from the factory with the oil drained off. It required refilling with oil after installation, which was a long process requiring great care. The new cable lengths are shipped from the Schenectady plant of the General Electric Company with the core filled with oil supplied by temporary reservoirs mounted inside the cable reels. The jointing is done under oil pressure with the temporary reservoirs connected to the opposite ends and is accomplished with very little loss of oil.

In the first cable the permanent oil reservoirs were placed about one mile apart and the maximum oil pressure on the cable was approximately 30 lb. In the new cable the oil reservoirs are placed about three to the mile and the maximum pressure is approximately 16 lb. The result of this decreased pressure has been a reduction in the amount of sheathing necessary. The first cable has a double sheathing. The inner layer of lead is reinforced by a spiral wrap of copper tape to give the strength necessary to stand the oil pressure, and over this is a second layer of lead to protect the copper tape from abrasion and corrosion. With the oil pressure cut in half the copper binder and outer lead sheath are not necessary.

A carefully worked-out plan of delivery of the cable reels from the factory has obviated the necessity of trucking the reels to the cable storage yard, holding them there until needed and then retrucking them to the place of installation. Deliveries are made to freight yards nearest to the points of installation as they are needed and are trucked only once—directly to the job. The schedule has been worked out so accurately that all cable is pulled in within 24 hours after it is dumped on the ground and much of it goes in the day of delivery.

Index Published Separately

THE index of the January to June, 1929, issues of the ELECTRICAL WORLD will be published as a separate pamphlet with elaborate cross references. If you bind your copies attach this notice to a sheet of paper, sign it with your name, company position and address and mail it to the Circulation Department, McGraw-Hill Publishing Company, Inc., Tenth Avenue at 36th Street, New York City, and an index will be sent to you.

Power from Flathead Lake

Federal Power Commission Engineer Thinks Montana Development Feasible—Permit for Little Colorado Sought—Lewis River Plant Favored —Other Projects

NO INSURMOUNTABLE obstacles exist to the adjustment of the conditions under which power development may proceed at Flathead Lake in Montana. This is the opinion of Major Glen E. Edgerton, chief engineer of the Federal Power Commission, who has just returned from a personal inspection of the project. He believes it to be entirely possible to protect the agricultural interests in the vicinity of Kalispell in the Flathead Valley. Sufficient data have been gathered in the field to allow an exact determination of the facts of the different lake levels. This will permit the commission to fix an upper level which will prevent damage to agriculture. In addition to the topographic surveys, studies were made of underground water conditions. The preliminary examinations which have been made in connection with this project have been unusual in their extent and thoroughness. The commission has under consideration an application for this site from the Rocky Mountain Power Company.

The United Verde Copper Company has applied to the Federal Power Commission for a preliminary permit covering a 82,000-hp. development on the Little Colorado River in Coconino County, Ariz. It is proposed to construct a dam and reservoir on the Tolchico site with other dams at Grand Falls, Coconino, Lower Falls and Black Falls. The power is to be used for the mining and smelting operations of the United Verde company, but the company offers to sell energy for public utility use in the vicinity of its operations.

A favorable report has been submitted by the Forest Service in connection with the proposed development of power on the Lewis River near Portland, Ore., by the Inland Power & Light Company. The original application for the preliminary permit contemplated the construction of four dams and power houses to have an installed capacity of 375,000 hp. Later an understanding was reached under which rights would be sought only on the two lower sites. The Forest Service report covers that part of the project which is known as the Ariel and Yale sites. This will permit the installation of 170,000 hp.

The application of the Washington Electric Company covering the Rock Island site on the Columbia River probably will be considered at the next meeting of the commission, which is likely to be held during the week beginning July 29. Conferences between representatives of the company and those concerned with the safeguarding of the fish industry indicate that no great difficulties will be experienced in reaching an agreement as to the number

and size of the fishways which will be provided.

The hearing before the commission scheduled for July 16, at which rights on the Chattahochee River on the Georgia-Alabama border were to have been discussed, has been postponed indefinitely. This is due to the fact that the Columbus Electric & Power Company was not in a position to appear on the date set.

An extension from July 5 to July 25 has been allowed in the period for the filing of briefs dealing with the opinion of the chief counsel of the commission with respect to its authority to reject an application because of contentions that the proposed development would mar scenic beauty.

Indications are that a preliminary permit will be issued in the near future covering the project of the Holston River Power Company in Tennessee.

The Southern California Edison Company has applied for a license covering 3 miles of transmission line in the Angeles National Forest, and the Southern Sierras Power Company has applied for a license covering a transmission line 3 miles long to serve the Slate Range mine.

A.S.A. and Standards Bureau Ratify Agreement

A co-operative agreement between the American Standards Association and the United States Bureau of Standards which will encourage national standardization activities in all industries was ratified by George K. Burgess, director of the Bureau of Standards, and by the board of directors of the American Standards Association last week, at the board's first meeting, a partial account of which was printed last week (page 76).

Under the terms of the agreement with the Bureau of Standards, the primary effort of the bureau will be to serve those industrial groups which have no satisfactory standardization facilities of their own. The bureau will help these groups to formulate temporary standards designed to meet immediate requirements. The American Standards Association will work primarily with those bodies having standardization facilities and will bring together such groups for the formulation of "American standards" which represent a true national consensus of approval. Where feasible, temporary standards prepared with the aid of the Bureau of Standards will also be brought before the American Standards Association for advancement to the rank of "American standards."

The board decided to launch an extensive national campaign to finance industrial standardization activities on a basis merited by the great savings which these activities are securing for American industry. A finance committee consisting of Bancroft Gherardi, chairman, Quincy Bent and Howard Coonley was appointed to head this effort.

William J. Serrill of the United Gas Improvement Company, Philadelphia, is president of the American Standards Association and chairman of the board of directors. Cloyd M. Chapman is vice-president. C. E. Skinner, assistant director of engineering with the Westinghouse Electric & Manufacturing Company and past-president of the A.S.A., is a member of the board of directors in addition to the nine men named last week.

In the Legislative Mills

GEORGIA.—A tax of one-fifth of 1 per cent on the gross receipts of all utility corporations will be levied in Georgia if a measure just introduced in the General Assembly is passed. In addition to this, the bill provides for a tax of one-fifth of 1 per cent on all products manufactured in the state, a tax of one-twentieth of 1 per cent on all goods sold at wholesale and a tax of one-fifth of 1 per cent on all goods sold at retail.

OKLAHOMA.—The special session of the Legislature adjourned July 5. Few bills were introduced which affected public utilities, and none were passed which were of special interest to electric light and power companies.

Purchases and Mergers

Representatives of the Republic Service Corporation of Coatesville, Pa., were present at the last meeting of the Radford (Va.) City Council with a proposal to purchase the electric utilities of the city. An ordinance is being made ready providing for an election on August 20 to decide whether the citizens are willing to accept the Pennsylvania company's offer of $400,500 cash for a 30-year franchise. On February 28 a bond issue for $175,000 was defeated. Prior to that time a proposal to sell the utilities to the Appalachian Electric Power Company for $275,000 was received by the City Council.

The Northern Indiana Public Service Company has purchased the electric distribution system of the Star Milling & Electric Company in Howe, Ind. The hydro-electric plant on Pigeon River in Howe will continue as the Star Milling & Electric Company, but its entire output will be purchased by the Northern Indiana company, which will build a line connecting Howe with the company's lines at Lagrange, Ind.

To the Iowa Electric Company, Cedar Rapids, has been granted a 25-year franchise to operate electric service in Lost Nation, Iowa, voters approving the franchise by five to one majority. The local company was owned by Henry Dobling and Fred Daniel, and purchase of the plant by the Iowa Electric was conditional upon issuance of the franchise.

Two more Kansas towns—Irving and McCracken—have voted to dispose of municipal light plants and purchase light and power from privately owned companies. The vote was taken under a law passed by the 1929 Legislature.

The W. N. Albertson Company of Omaha has completed negotiations for the purchase from 50 small utility corporations of plants operated in 200 towns in Nebraska, Wisconsin, Michigan, Missouri, Minnesota and Ohio, including a number of electric properties. The consideration will total $7,500,000. The company now operates various utilities in 150 towns.

The District Court at Colorado Springs, Colo., on July 11 made permanent the injunction previously noted as having been granted to some citizens of Burlington, Colo., restraining the city officials from selling the municipal electric plant to the Inland Utilities Company of Denver. The first election, held in April, resulted in a vote to retain the plant, but in a special election held June 4 a close vote favored selling the plant to the Inland. It was brought out in court that there were some irregularities in the June election.

California Utilities and Irrigation Districts Agree

An agreement has been entered into between the San Joaquin Light & Power Corporation, Fresno, Calif., and the Modesto Irrigation District whereby the power company will supply the irrigation district with standby service and power during the district's low-water periods. A second contract has been entered into with the Turlock Irrigation District under the terms of which that district agrees to permit the San Joaquin company to sell to the Modesto Irrigation District power now being purchased by the company from the Turlock district at the Don Pedro plant.

Under the agreement the company is allowed to use the Turlock district's transmission lines to deliver the power to the Modesto district, and in the event that the power being purchased by the San Joaquin company from the Don Pedro plant may be insufficient to meet the need of the Modesto district, then the company will be permitted to use the Turlock district's lines to deliver to Modesto additional power from the San Joaquin company's system. The power is being furnished by the San Joaquin company at prices set forth in its rate schedules on file with the California Railroad Commission, which formally has approved both contracts.

The consummation of these agreements brings to an end the efforts of the Modesto Irrigation District to obtain power in addition to its share of the power generated at the Don Pedro plant built by the Modesto and Turlock districts. The Modesto district had filed a complaint with the California Railroad Commission against the San Joaquin Light & Power Corporation and the Pacific Gas & Electric Company, alleging that both companies had refused to serve it with energy and asking the commission to order the companies to do so. The district also had announced that it would build a 7,500-hp. Diesel-engine electric generating plant and had called for bids on the first 1,500-hp. unit.

With the closing of the contracts the Railroad Commission has dismissed the complaint of the district against the two power companies and the district has agreed not to build the Diesel-engine standby plant.

National Food Preservation Program Complete

Full details of the plans made by the National Electric Light Association to participate in the work of the National Food Preservation Council are contained in a booklet issued from the council's headquarters at 420 Lexington Avenue, New York. The formation of this body and its purposes were recorded in the ELECTRICAL WORLD for June 1 (page 1104). The N.E.L.A. is co-operating with twelve other bodies, including the Society for Electrical Development, the Refrigeration Division of the N.E.M.A., the Association of Edison Illuminating Companies and the National Refrigerator Manufacturers' Association. The twenty regional directors in charge of the campaign are all well-known light and power company men. As previously announced, the president of the council is M. S. Sloan. J. E. Davidson is vice-president, P. S. Young treasurer and P. B. Zimmerman secretary.

A schedule of operations from July 1 to October 7 is included in the publication referred to above. In this advertising in newspapers and national magazines, national radio broadcasts, literature, decorations and open-house receptions all play a part. Detailed plans for local operation are divided into three sections—suggested plan for cities up to 25,000 population, suggested plan for cities between 25,000 and 100,000 and suggested plan for cities of more than 100,000.

A nation-wide contest for essays of 400 words or less on "Why 50 Degrees Is the Danger Point" has been organized. First prize will be a ten-thousand-dollar model home, to be built where desired, or $10,000 in gold; the second prize a 1930 Cadillac five-passenger coupé, or $3,500 in gold; third prize, $2,000; fourth, $1,000; fifth, $500; sixth, $400; seventh, $350; eighth, $300; ninth, $250; tenth, $200. There will also be 25 prizes of $100 each and 800 of $5 each. The contest will be announced to the public by widespread advertising in the September issues of leading national publications. It will close on September 30. The judges will be Merle Thorpe, B. C. Forbes and Dr. Walter H. Eddy of Columbia University.

A.E.C. Makes Argument for Hydraulic Laboratory

Although the House rivers and harbors committee failed to take action on the Ransdell hydraulic laboratory bill during the late Seventieth Congress, the American Engineering Council obtained permission to file a brief completing its testimony in behalf of the measure. This brief was prepared by B. R. Van Leer, assistant secretary of the council. It is planned to reintroduce the bill in the next regular session. Those interested in the legislation believe that they will be able to expedite their cause if they can have the measure sent to some other committee than the one on rivers and harbors.

In brief, Mr. Van Leer brings out that the Bureau of Standards, as is proposed in the bill, is the only logical location for a national hydraulic laboratory. General use for research work cannot be made of existing technical university laboratories, as has been suggested by the army engineers, because the universities are too crowded with routine instruction work and because a complete hydraulic laboratory would be too expensive for a university to maintain. The cost of the laboratory proposed for the Bureau of Standards is $350,000.

As to the evidence presented to the committee that hydraulic turbines have been improved to such an extent that there is no great need for further development, it is stated that there are hundreds of locations in America where large quantities of water are available but where there is a small fall or head. For such locations there are no satisfactory turbines, it is pointed out. It is brought out also that turbine construction is not the only problem of hydro-electric installation. It is stated that power companies are confronted with many problems in connection with dams, deflecting walls, intakes, gates, spillways and trash racks which they would be glad to present to a competent hydraulic laboratory for solution, were one available.

In conclusion, the brief calls attention to the use by the army engineers in all their estimates of coefficients and data largely obtained by past experimentation in hydraulic laboratories. Despite this fact, engineer officers in their testimony minimized the practical value of research laboratories. It is recommended, therefore, that, though the Corps of Engineers be allowed ample funds for building laboratories to use in river and harbor work, control of a national hydraulic laboratory, such as the one suggested, be refused to it.

Further Plans for Expansion by Shawinigan Company

The Shawinigan Water & Power Company has completed arrangements with the Quebec government for the early construction of a large storage reservoir near St. Michel des Saints on the Mattawin River, one of the most important southerly tributaries of the St. Maurice. As this reservoir is close to Grand' Mère, it will be possible for the Shawinigan plants at Grand' Mère, Shawinigan Falls and La Gabelle to be furnished with additional water on very short notice.

Furthermore, it is expected that when the Mattawin storage comes into operation it will be possible to obtain a bet-

Steady Progress Being Made at Fifteen-Mile Falls on the Connecticut

WITH 1,800 men now at work in the field, the Fifteen-Mile Falls lower hydro-electric development of the New England Power Association on the Connecticut River near Barnet, Vt., has reached a stage where the river has been diverted from its channel to enable construction work to proceed freely at the dam and power-house site. A diversion channel has been completed and is now in use as shown, its capacity being the full normal flow of the river. The upstream entrance of the channel is shown at the right and a downstream view at the left. A dam 170 ft. high and a generating plant of 120,000 kw. rating are to be constructed at the point here shown.

ter use of the far-away reservoirs in the upper St. Maurice, particularly the Gouin. In anticipation of the completion of the Mattawin project in 1930, Shawinigan is already arranging for the installation of an additional unit in each of the three plants, which units will have a combined capacity of more than 100,000 hp. The Mattawin project will cost about $4,000,000.

The first step in the company's great power development on the upper St. Maurice River will start with a line which that company is now building from Shawinigan Falls to La Tuque and which will eventually connect with the first development that the company will build on the St. Maurice. The line being built will ultimately transmit 100,000 hp., but the exact location of the power plants to be built is not yet determined. The survey is being made both on land and from the air. When the Shawinigan company obtained the rights on the upper St. Maurice, it was estimated that the development of the rapids would mean an eventual new supply of more than 600,000 hp.

British Commission's Sixth Grid Scheme

Now Ready for Standardization in Northumberland-Durham-Yorkshire District at Eventual Cost of $30,000,000—Progress Made in Scotland

ADVICES from London say that the British Electricity Commissioners have completed the plan of the sixth of their great regional electrification schemes. It deals with over 5,000 square miles, covering the Counties of Northumberland and Durham and part of the North Riding of Yorkshire and will be known as the Northeast England Electricity Scheme, 1929.

Since the passing of the electricity (supply) act, 1926, the commissioners have prepared and the Central Electricity Board has adopted five regional schemes to meet the needs respectively of central Scotland, southeast England, central England, northwest England (including North Wales) and mid-east England. Following on the present scheme the commissioners are to transmit to the Central Board a scheme covering southwest England (including South Wales) and in the near future a small supplementary scheme for East Anglia. These will complete the regional plans for England and Wales, and in the early part of next year it is hoped that the preparation of schemes for southern and northern Scotland will see the whole of Great Britain covered. When the grid lines are connected the generating resources of the country will be operated by the Central Electricity Board as one organized whole.

The northeast England area had a population at the last census of approximately 2,674,800, and the district embraces densely populated industrial tracts dealing with coal mining, shipbuilding, the production of iron and steel, engineering and chemical trades. These industries are chiefly concentrated in the vicinity of the coast and the lower reaches of the Tyne, Wear and Tees. Inland and north of Blyth there are wide stretches of agricultural territory which, with a few isolated exceptions, are at present unprovided with any system of electrical supply. In view of the organized and intensive electrical development in the industrial parts of the area, of which the greater part has been carried out at a non-standard frequency of 40 cycles per second, the preparation of a scheme has involved economic and engineering considerations which are of an unusual character.

The Newcastle-upon-Tyne Electric Supply Company and associated companies are already supplying over an extensive area electricity generated at a cheap rate at a number of interconnected stations and have within the limits of their areas of supply anticipated to a large extent the kind of development that is to be carried out by the Central Electricity Board on a more comprehensive scale throughout the country. The situation is also affected by the existence of a number of private generating stations and waste-heat plants, with the owners of which the associated companies have entered into contractual relations. Even in these circumstances, however, the commissioners are satisfied that scope exists for further improvement and that a scheme involving a gradual change of frequency to the standard of 50 cycles per second is not only feasible but offers some small advantage to the associated companies and definite advantages to other generating plants in the area.

At present there are 32 authorized "undertakers" who will be brought within the scheme. Between them they own fifteen public generating stations. The consumption of electricity per head of the population was about 247 kw.-hr. in the year 1927-28, and it is estimated that this will be increased to an average of 410 kw.-hr. in 1935-36. Under the proposals of the commissioners six existing stations will be selected and operated for the board—namely, Carville A, Carville B, Dunston, North Tees, Darlington and Sunderland. It is not anticipated that any new stations will be required, but the scheme provides for five further stations to be worked under temporary arrangements for a few years. Broadly speaking, the first four of the above stations, now operated by the Newcastle-upon-Tyne Electric Supply Company, will supply the base load, while the remainder will be used for meeting the peak load. In due course it will be possible to reduce the number of peak-load stations required.

The plants will be interconnected by a series of high-pressure main transmission lines designed in a series of rings, so that there will be alternative routes to points of supply and consequently greater security against breakdown. The main transmission system will comprise 102 route miles of line and five transforming stations. Incidentally, the interconnection of these stations will result in the release for revenue-earning purposes of about 80,000 kw. of plant now used for standby purposes. Standardization is to be carried out in 25 undertakings, and the work will be done over a period of years in stages and in such a manner that no further 40-cycle generating equipment beyond that already sanctioned shall be installed. The estimated eventual cost of the standardization is nearly $30,000,000.

A definite stage was passed recently in the construction of the national electric "grid" system in the west of Scotland. There was strung over the Clyde, just on the western boundary of Glasgow, the pilot wire by means of which seven cables are now being stretched across, one after another, between two steel towers 300 ft. in height, one on each side of the river. From these towers the lines will run inland on both sides, carried by smaller towers erected at suitable distances apart along the routes arranged by the Central Electricity Board. Between the two riverside towers there is a gap of 1,000 ft. Between two 360-ft. towers in Kincardineshire there will be a stretch of cable of nearly three-quarters of a mile, but the difficulties of erection of the Clyde crossing were greater because of the high clearance required for shipping, and also because there are two circuits—one to Paisley, the other to Greenock.

I.E.C. Holds Committee Meetings in London

A number of the advisory committees of the International Electrotechnical Commission have met in London recently. The advisory committee on steam turbines, with the United States national committee as secretariat, met on July 1 to 6. The delegates from the United States were Dr. W. F. Durand, past-president of the A.S.M.E.; F. Hodgkinson, consulting mechanical engineer of the Westinghouse Electric & Manufacturing Company; I. E. Moultrop, chief engineer of the Edison Electric Illuminating Company of Boston, and C. B. Le Page, assistant director of the A.S.M.E., representing the secretariat. Word has been received by cable that the American viewpoint still was sustained.

A meeting of the advisory committee on electric traction equipment was held on July 8 and 9. R. E. Ferris of the Westinghouse Electric & Manufacturing Company was the chief American delegate, assisted by Dr. A. E. Kennelly and L. T. Robinson. The committee on rating of electrical machinery was scheduled to meet on July 10 to 13. American delegates were Dr. Kennelly, L. L. Elden, Dr. Harold Pender, L. T. Robinson, Arthur Wright, Dr. C. O. Mailloux and Prof. Walter Upson.

Briefer News

UTILIZATION OF TIDAL POWER IN FRANCE.—Work is progressing on the establishment of a hydro-electric station to utilize the power of the tides at Aberwrach in the French Department of Finistère. It is also now proposed to establish a similar plant to utilize the power of the tides on the River Rance in Brittany, a company for this purpose having been formed in Paris.

MISSOURI ASSOCIATION OF PUBLIC UTILITIES REMOVES TO CAPITAL.—The Missouri Association of Public Utilities has moved its headquarters from St. Louis to Jefferson City, where they will be in the Merchants' Bank Building, with Jesse Blythe, assistant secretary of the association, in charge.

RURAL ELECTRIFICATION IS GAINING IN OKLAHOMA.—Figures recently compiled by the Oklahoma Utilities Association from reports of the three largest light and power companies of the state show that there were connected with the lines of these companies on January 1, 1929, 1,757 rural customers, of which number 423 were added to the companies' customer lists during 1928.

NEW HEADQUARTERS FOR CENTRAL PROPERTIES OF ILLINOIS POWER & LIGHT.—The Illinois Power & Light Corporation is planning construction of a three-story building at Decatur for the central group and Decatur division of its properties. It will cost $200,000 and be designed for ultimate expansion to eight stories and a full half block. All offices will be transferred to this building, at Wood and South Water Streets, now occupied by the interurban station.

NEW ENGLAND LIGHTING MEN ELECT OFFICERS.—R. H. Bowman of the Associated Gas & Electric System, Cambridge, Mass., was elected chairman of the Lighting Engineers' Club of New England at the recent annual meeting, and the other officers will be: Vice-chairman, E. J. Broderick, Narragansett Electric Company, Providence, and secretary and treasurer, W. B. Pepper, Charles H. Tenney & Company, Boston.

WASHINGTON WATER POWER COMPANY'S NEW UNDERTAKINGS.—Construction projects planned for the near future by the Washington Water Power Company include a new outdoor substation for the Hollywood district in Spokane with three 13,000-volt lines to augment city service lines and the building of a 13,000-volt line, 14 miles in length, from the Nine-Mile power station to connect with the Foshay system at Deer Park, Wash. Construction crews are completing the 50-mile, 110-kv. transmission line from the Chelan power station to Stratford to augment service for irrigation and the electrified section of the Chicago, Milwaukee, St. Paul & Pacific Railway, in addition to effecting a more complete tie-in of the Chelan and Oroville plants with the Spokane River system of the company.

LOS ANGELES DEPARTMENT WINS ADVERTISING TROPHY.—At a recent convention of the Pacific Coast Advertising Club held in Oakland, Calif., the Los Angeles Department of Water and Power won first prize in the public utility group for its advertising campaign on electric refrigeration. In awarding the trophy, which was an electric clock donated by the Pacific Gas & Electric Company of San Francisco, the judges pointed out that the refrigeration campaign was conspicuous for its merchandising style.

Coming Meetings

[A complete directory of electrical associations, with their secretaries, is published in the first issue of every volume. For latest list see issue of July 6, page 46.]

Camp Co-operation IX—Association Island, Henderson Harbor, N. Y., Aug. 2-6. Society for Electrical Development, 600 Graybar Bldg., 420 Lexington Ave., New York.

International Association of Municipal Electricians—Statler Hotel, Boston, Aug. 20-24. H. N. Lang, box 1864, Orlando, Fla.

International Association of Electrical Inspectors, Western Section—Book-Cadillac Hotel, Detroit, Aug. 26-28. W. S. Boyd, 175 W. Jackson Blvd., Chicago. International convention, Vancouver, B. C., Canada, Sept. 9-11. F. D. Weber, P.O. box 745, Portland, Ore.

National Association of Railroad and Utilities Commissioners—Glacier National Park, Mont., Aug. 27-30. J. B. Walker, 270 Madison Ave., New York.

American Institute of Electrical Engineers — Pacific Coast convention, Santa Monica, Calif., Sept. 3-6. F. L. Hutchinson, 33 West 39th St., New York.

Pennsylvania Electric Association—Bedford Springs Hotel, Bedford Springs, Pa., Sept. 4-6. H. A. Buch, Telegraph Building, Harrisburg, Pa.

Association of Edison Illuminating Companies—Chateau Frontenac, Quebec, Sept. 9-12. P. S. Millar, 80th St. and East End Ave., New York.

Rocky Mountain Division, N.E.L.A.—Hotel Colorado, Glenwood Springs, Colo., Sept. 9-11. O. A. Weller, Public Service Co. of Colorado, Denver.

New England Division, N.E.L.A.—Hotel Griswold, New London, Conn., Sept. 9-12. Miss O. A. Bursiel, 20 Providence St., Boston.

Empire State Gas and Electric Association—Saranac Inn, Saranac Lake, N. Y., Sept. 19-20. C. H. B. Chapin, Grand Central Terminal, New York.

Americal Electrochemical Society — Hotel William Penn, Pittsburgh, Sept. 19-21. C. G. Fink, Columbia University, New York.

Illuminating Engineering Society — Bellevue-Stratford, Philadelphia, Sept. 24-27. A. B. Oday, 29 West 39th St., New York.

Great Lakes Division, N.E.L.A. — French Lick Springs, Ind., Sept. 26-28. T. C. Polk, room 110, 140 South Dearborn St., Chicago.

American Electric Railway Association —Atlantic City, Sept. 30-Oct. 4. J. W. Welsh, 292 Madison Ave., New York.

Association of Electragists International—New Ocean House, Swampscott, Mass., Sept. 30-Oct. 3. L. W. Davis, 420 Lexington Ave., New York.

National Safety Council — Stevens Hotel, Chicago, Sept. 30-Oct. 4. W. H. Cameron, 108 East Ohio St., Chicago.

MUNICIPAL PARTY PLATFORM IN LOUISVILLE TOUCHES ON UTILITY RATES.—Democrats in Louisville have included a long plank on public utilities in their platform for the municipal election in the fall. It declares, among other things against any increase in electric or gas rates and for their reduction when existing contracts with the Louisville Gas & Electric Company expire.

JACKSON, TENN., TO VOTE ON BUILDING MUNICIPAL PLANT.—Dissatisfied with a new rate schedule filed by the West Tennessee Power & Light Company, the City Commissioners of Jackson, Tenn., which has a population of 20,000, have passed a resolution providing for an election on August 1 to enable the voters to pass on a proposed issue of $750,000 in bonds to purchase or build electric and gas plants, either or both.

PATERSON, N. J., TO HAVE NEW SUBSTATION.—Work has been started on a substation building at Van Houten and Prospect Streets., Paterson, N. J., for the Public Service Electric & Gas Company. The building will be of cloister brick with stone trim and will be two stories high and 48 ft. x 46 ft. in size plus an extension 30 ft. x 123 ft. The installation will be in large part out of doors.

PLANT PROPOSED FOR BUFFALO RIVER, ARK.—Contemplated development of zinc deposits in Newton County, Ark., has brought a plan for a hydro-electric plant on the Buffalo River 12 miles downstream from Jasper. Here a dam 105 ft. high, forming a reservoir covering 10 square miles, is advocated by the mining promote The power would be used to smelt the zinc and thus render it profitable to transport it.

NEW SUBSTATION FOR ANDERSON, IND.—Work has begun on the construction of a large substation for the Indiana General Service Company two miles east of Anderson, Ind., where 33,000-volt current will be stepped down to 13,000 volts for the standby line going into the city power plant. Connection with a 66,000-volt emergency line of the Northern Indiana Power Company at the substation will provide a three-way power arrangement that will insure service in emergency.

WHEELING ELECTRIC COMPANY EXPANDS.—The Wheeling (W. Va.) Electric Company will erect a modern substation in the Elm Grove district, according to an announcement made on July 2 by company officials. This station will supply residential and industrial light and power and will supply energy to coal mines which are expected soon to be opened in the district. A transmission line will be constructed from the power station at Forty-second Street to the Elm Grove substation. The Wheeling Electric Company purchased the power business of the Wheel-

ing Public Service Company, a traction company, several months ago. The purchase affected 8,000 industrial and domestic consumers.

NEW HAMPSHIRE PUBLIC SERVICE TO ENLARGE THE SOMERSWORTH HYDRO DEVELOPMENT. — The New Hampshire Public Service Company is planning to increase the power output of the recently purchased power holdings of the Great Falls Manufacturing Company at Somersworth, N. H. This will be effected by combining the two falls of 30 ft. each, thus enabling the power plant to operate with a 60-ft. head. The plant yet to be constructed will have a capacity of 3,500 hp.

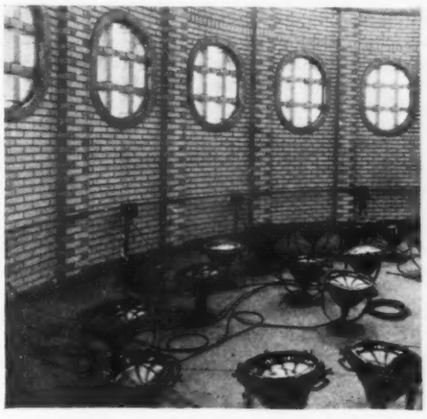
CARMEL, N. Y., TO HAVE GENERATING PLANT.—The Public Service Commission of New York has approved the petition of the New York State Electric Corporation for the construction of an electric generating plant in the town of Carmel, Putnam County. The corporation serves all the towns surrounding Carmel, has 48 miles of construction in the town and will expand as required. It serves several thousand customers.

POWER REPORT ON LITTLE COLORADO RIVER.—The Geological Survey, Department of the Interior, has prepared a three-color map of the Little Colorado River from its mouth to the Tolchaco dam site, Ariz., a distance of 103 miles. The map consists of three plan sheets and two profile sheets on a scale of 2 in. to the mile. George F. Holbrook, a survey engineer, has prepared a brief discussion of the power value of the Little Colorado, covering several reservoir and dam sites.

QUEENS BOROUGH RATES ARE LOWERED.—M. S. Sloan, president New York Edison and associated electric companies, announced this week that the top rate of the New York & Queens Electric Light & Power Company will be cut from 8 cents a kilowatt-hour to 7 cents, effective August 1. It is estimated that this reduction, which brings the top rate for electricity in Queens down to the price prevailing in Manhattan and Brooklyn, will mean a saving of a million and a half dollars in electric bills for the customers of the company in Queens in the next year.

NORTHERN STATES POWER MAKES ANOTHER RATE CUT.—Robert F. Pack, vice-president and general manager of the Northern States Power Company, announces additional rate reductions which will amount to as much as $75,000 a year for wholesale users of electricity. The cut will mean a saving of $1,000 a year each to a considerable number of consumers. This reduction follows others which have been made in the last eighteen months. In January, 1928, the company reduced its retail power rate to consumers in its territory outside Minneapolis and St. Paul. On November 1 a substantial cut to retail users in the Twin Cities was made. Mr. Pack at that time estimated the combined savings on the whole system at more than $1,000,000 annually.

FLOODLIGHTING A DOME OF A BUILDING FROM THE INSIDE.—The 36-ft. dome of the new Williamsburgh Savings Bank building in Brooklyn, N. Y., has been floodlighted internally, thereby solving the old problem of making light "bend" around a curved surface to illuminate the top of the dome. This is the first time the lighting of a dome of a building from the inside in this manner has been done, according to engineers of the General Electric Company who designed the lighting. It is not a glass dome, but its curved surfaces are built up of horizontal metal louvers. Viewed by an observer from any point below the level of the dome, these louvers overlap, and their gilded



surfaces appear to the eye as a solid gilded dome. At night the surfaces of the louvers are illuminated by means of floodlamps placed on the floor within the dome, again giving the appearance of a gilded dome illuminated from some mysterious source of light. To add to the interest of the general effect, varicolored light is used through a cycle of automatic changes giving a continuously changing variety of color tones to the dome.

ONTARIO HYDRO COMPLETES NIAGARA-ST. THOMAS LINE.—Completion of its double-circuit 110-kv. steel-tower transmission line from the Niagara River to St. Thomas, Ontario, is reported by the Hydro-Electric Power Commission of that province. Work on the line, which is 105 miles in length, was started late last year and had been carried through continuously since except during one month of bad weather in the spring. The towers are normally 97 ft. high over all and are spaced at about five to the mile. The line cost about $1,750,000.

VALLEJO ELECTRIC LIGHT & POWER WILL REDUCE RATES. — A reduction in the rates charged by the Vallejo (Calif.) Electric Light & Power Company has been ordered by the California Railroad Commission, effective August 1. The new rates will mean a reduction of approximately $50,000 a year to consumers in Vallejo and vicinity and will average about 18 per cent less than those now prevailing. A 7 per cent return was held to be adequate. According to the California Railroad Commission's investigators, the company paid a dividend of 132 per cent to its stockholders in 1928 and has for seventeen years earned an average rate of 17.2 per cent on its investment. The company, which buys its energy wholesale from the Pacific Gas & Electric Company, had expressed its willingness to reduce its rates, which, as just fixed, will be about 10 per cent under the level of corresponding rates now charged by that company.

NEW ORLEANS "WHITE WAY" THOUGHT ASSURED.—Definite adoption of two ordinances by the Commission Council of New Orleans is thought virtually to assure an extensive "white way" for the city. One ordinance approves specifications and the other directs the commissioner of public utilities to call for bids. Plans for the new lighting call for high-power lights on impressive standards to illuminate Canal Street and to lead down Rampart Street to the municipal auditorium now under construction. The Vieux Carré will have a special type of standard of antique appearance, in keeping with its atmosphere.

ELKINS (W. VA.) MUNICIPAL PLANT AGAIN MEETS OBSTACLE.—For the second time the Attorney General of West Virginia has disapproved a bond issue authorized at the general city election on March 5 of $135,000 for the construction of a municipal light and power plant at Elkins, and appeal will probably now be made to the Supreme Court of the state. As explained in the ELECTRICAL WORLD for July 6 (page 33), the City Council tried to meet the legal objection, but the Attorney General holds that the action taken with this end in view would involve a resubmission of the issue to the voters.

COLUMBIA SUMMER COURSE IN ELECTRICITY AND HOUSEHOLD EQUIPMENT.—Teachers' College, Columbia University, New York City, with the co-operation of the N.E.L.A., will again offer a three weeks' course in electricity and household electrical equipment on July 29 to August 16. The morning sessions will be under the direction of Dr. C. J. Lynde, head of the department of physics and household engineering of Teachers' College, and the afternoon sessions will be in charge of the association. Any woman actively engaged in or studying to prepare for the furthering of the application of electricity to household use may attend the course.

Territorial Monopoly

Oregon Public Service Commission Evinces Tendency to Modify Practice of Always Recognizing Rights of Established Operators.

CONTRARY to the accepted theory that an "operating field" comprises certain defined territory in which but one utility may enjoy exclusive privileges so long as adequate and reasonable service is rendered, recent developments in Oregon indicate, according to a correspondent of the ELECTRICAL WORLD, that this former practice of recognizing prior rights of established operators is to be more or less abandoned by the Public Service Commission of that state.

The commission had already held, in the Wood River Power Company case, that the establishment of a generating plant and the filing of a rate tariff obviates any necessity for applying for an operating certificate, even though an operating field logically belonging to another utility is being invaded. It matters not, according to the commission's ruling, that there has been no formal demand made for extended service, or that no immediate requirements exist for service in a given district to justify line extension on the part of the utility which is pioneering in the development of a field. The mere fact that a small operator may see fit to pre-empt a portion of the territory and render service to a few customers entitles him to all of the protection from competitive incursion guaranteed by the certificate of convenience and necessity clause.

In the Wood River Power Company case the California-Oregon Power Company acquired by purchase all of the operating rights held by the former utility. Although the Wood River utility's plant and transmission system were said to be absolutely worthless to the California-Oregon people, its purchase was necessary before the latter could carry out extension plans which had been formulated years previous and in accordance with the established rules and methods governing the orderly and sound economic expansion in this particular field.

Within a short time the commission will hold a hearing in regard to the application of the Columbia Utilities Company for a certificate of convenience and necessity. This applicant is seeking the right to operate within a few miles of the territory in which the Wood River Power Company was formerly located and, consequently, within the operating field of the California-Oregon Power Company.

To just what extent the cost of buying out these invading systems will reflect in the rates for service rendered the customers of the purchasers has not been considered as yet by the commission, but departmental engineers are of the opinion that these items of expense must in some way be included in development and extension costs and as such be subject to examination in rate-making valuation proceedings.

Recent Court Decisions

COMMISSION CANNOT EXERCISE JURISDICTION OVER INVESTMENTS IN ANOTHER STATE.—The Great Lakes Stages appealed from a decision of the Ohio Public Utilities Commission dismissing its application for authority to issue stock. The Ohio Supreme Court has sustained the commission on the ground that that body has no jurisdiction to grant to an interstate public utility authority to issue securities to acquire, construct, extend, improve or maintain facilities devoted to serving customers outside of the state. (166 N. E. 404.)*

DOES MORAL TURPITUDE ATTACH TO POLITICAL EXPENDITURES BY PUBLIC SERVICE COMPANY UNDER ATTACK? — The Fort Dodge (Iowa) Gas & Electric Company, upon plea of guilty to three counts charging illegal expenditures in the March municipal campaign in Fort Dodge, has been fined $800 and costs on each of the counts in the District Court there. Seventeen other indictments brought against the company in connection with the election campaign were dismissed. The maximum penalty for the violation is $1,000. In imposing sentence the court said: "The question of the defendant's moral turpitude in these cases is one to which I have given considerable thought. It is a difficult question to decide, and I do not know whether it can be decided. There was a vigorous campaign in the election, which mere fact is not in itself sufficient cause for condemnation. The vigorous campaign can be wholesome, whereas a quiet campaign is often dangerous to public welfare. I infer that the corporation was attacked, and it is asking too much of human nature to expect the corporation not to defend itself. In these cases the corporation is charged with having used the radio, placards and advertising to state its case, and there is insufficient evidence to show the existence of a campaign of corruption. The company's willingness to plead guilty must also be taken into consideration."

LAND OVERFLOWED FOR HYDRO PLANT CANNOT BE CONSTRUED AS PART OF UNITED WHOLE FOR THE PURPOSE OF SETTING DAMAGES.—In Gilmore vs. Central Maine Power Company the plaintiff, dissatisfied with the award made to him for land overflowed by the company's hydro-electric system, took the case to the Maine Supreme Judicial Court, contending that he should be allowed damages based upon the value of the property to the power company for water-power purposes, and that the commissioners should consider the land as part of a united whole, the whole consisting of all the parcels of land necessary to a completed water-power development, which would include the lands taken. The court refused to entertain this argument, saying: "This theory, if adopted, would make the owner of any land flowed in a hydro-electric development a quasi partner, entitled to share in the value of the entire development without sharing in the burden of its cost or the risk of its failure. The value-for-water-power-purposes theory has no foundation, either in reason or authority. . . . The amount of land damages paid is reflected in the price that the corporation is permitted to exact for its product. In the last analysis the pending case is not between the complainant and defendant, but between the complainant and the consuming public, which (except under extraordinary conditions) must pay the defendant a fair return upon the entire necessary cost of the development, including compensation paid landowners." (145 At. 137.)

*The left-hand numbers refer to the volume and the right-hand numbers to the page of the National Reporter System.

Commission Rulings

NEW HAMPSHIRE COMMISSION SAFEGUARDS STATE WATER POWER.—The Public Service Commission of New Hampshire has granted permission to the Grafton Power Company to export electrical energy generated at the plant now being built at Fifteen-Mile Falls, on the Connecticut River, conditioned, however, upon such exportations being suspended, "in whole or in part," whenever, after notice and hearing, the commission "shall find that such electrical energy, or any portion thereof, is reasonably required for use within the state and that the public interest requires that it be delivered for such use." That laws governing interstate commerce may not be invoked to prevent discontinuance of contracts calling for exportation of energy, it is stipulated that the order of the commission "shall be incorporated as a condition and one of the terms" of all contracts of the Grafton Power Company involving the transmission of electrical energy beyond the confines of New Hampshire. Another condition is that the company shall furnish service within the state at "fair, just and reasonable rates" and upon terms as favorable as shall be granted to consumers outside the state.

DIRECT-CURRENT SERVICE TO BUILDING CONTRACTORS. — The New York Public Service Commission recently discontinued and closed without prejudice the complaint of the Structural Steel Board of Trade of New York City against the New York Edison Company, which alleged that the company refused to furnish direct current for temporary installations for construction in New York City. Any contractor doing business with the New York Edison Company may file a further complaint. Counsel for the contractors claimed there had been serious delays in rendering of service, and this was not denied. The company, however, pointed out that it would furnish alternating current for any construction purpose at any location within its territory and that it would furnish direct current for structural steel hoisting at any location where direct-current equipment is available. The company also said that it would furnish within 24 hours to any contractor or architect information concerning what kind of current would be available at a particular location. Counsel for the New York Edison Company expressed the belief that the company should continue to furnish direct-current service for five to ten years in order to give the contractors ample time to cover the losses they would have to incur in abandoning their present equipment. "The company's position," Chairman Prendergast said, "on the other hand, was stated to be that the continuance of rendering direct-current service would require considerable capital outlays which were not justified and the burden of which would have to rest upon the consumers of the company."

News About Men of the Industry

E. B. Criddle Heads Pacific Coast Association

Eugene B. Criddle, who was elected president of the Pacific Coast Electrical Association, as recently announced in the ELECTRICAL WORLD, has been prominently identified with utility properties on the Pacific Coast for a number of years. He has served the Pacific Coast association on important committees almost from its organization and was made first vice-president last year. His election to the presidency is a recognition by the industry of a long career of activity and outstanding achievement in the electrical utility field. Mr. Criddle became associated with the Nevada-California Power Company and the Southern Sierras Power Company in 1911. After serving as manager of the northern district for two years he was made general agent of these companies with headquarters at Riverside. He continued in this capacity until he was made a vice-president of the Southern Sierras Power Company in 1923. At the present time Mr. Criddle is also vice-president of the Nevada-California Power Company. A native of Tennessee, Mr. Criddle engaged in railroad work, public accounting and in other activities connected with industrial enterprises before entering the public utility field.

HENRY I. HARRIMAN, chairman of the board or directors of the New England Power Company, vice-chairman of the board of the New England Power Association and president of the Boston Chamber of Commerce, has been re-elected head of the last-named organization for a fifth term.

HERBERT A. WAGNER, president of the Consolidated Gas, Electric Light & Power Company, Baltimore, and also of the Annapolis & Chesapeake Bay Power Company, a subsidiary, has been appointed a member of the board of trustees of the Community Fund, Baltimore. The organization will raise the necessary funds to carry on the work done by 35 charitable and welfare associations. The campaign will start in the fall.

V. J. BRAIN, assistant engineer in the electrical engineering department of the New York Edison Company, has resigned to become chief electrical engineer of public works at Sydney, New South Wales, Australia. Mr. Brain was graduated in electrical engineering from the University of Sydney in 1921. He joined the New South Wales Railway, Sydney, but removed to the United States in May, 1922. It was in the spring of 1925 that he entered the employ of the New York Edison Company

C. E. WALTON, formerly electrical engineer with E. L. Phillips & Company, New York, has resigned that post and on July 15 became connected with Gannett, Seelye & Fleming, Engineers, Inc., of Harrisburg, Pa., as engineer at Buenos Aires, Argentine Republic, on properties of the Cia. Sud Americana de Servicios Publicos, S. A.

WILSON ARTHUR, who has been manager of sales and distribution for the Northern Ohio Power & Light Company for several years, has joined the engineering and operating staff of the Allied Power & Light Corporation. Mr. Arthur went to Akron in May, 1918, as commercial manager and in 1924 he was given charge of distribution on the promotion of L. G. Tighe to assistant general manager. Mr. Arthur was formerly with the Westinghouse Electric & Manufacturing Company in Pittsburgh and Cincinnati as sales engineer. Mr. Arthur is succeeded by E. G. MANGOLD as commercial manager and A. L. RICHMOND as general superintendent of production and distribution. Mr. Richmond has been superintendent of production for several years, while Mr. Mangold has been power sales engineer for the Northern Ohio company for the last five years.

E. L. Edwards New President of Michigan Association

E. L. Edwards, who was elected president of the Michigan Electric Light Association, as announced recently in the ELECTRICAL WORLD, has been vice-president and general manager of the Michigan Electric Power Company since 1927. Since leaving school, Mr. Edwards has worked in every department of the electrical utility industry. After engaging in practical engineering he entered the securities and merchandising division of the Milwaukee Electric Railway & Light Company.

Five years ago Mr. Edwards removed to Bad Axe, Mich., in an engineering capacity. At that time five small companies were operating in sixteen towns in the "Thumb" of Michigan, serving 2,000 customers. Later these companies were merged into the Michigan Electric Power Company. Two years ago Mr. Edwards was made vice-president and genral manager of the company.

Jacob Hekma Vice-President Commonwealth & Southern

Jacob Hekma, newly elected a vice-president of the Commonwealth & Southern Corporation, was born in the Netherlands on April 29, 1879, coming to the United States with his parents in 1884. He was educated in public schools of Grand Rapids, Mich. Mr. Hekma entered the employment of the Michigan Trust Company in 1896 and resigned as auditor in 1905 to accept a similar position with Hodenpyl & Hardy. He became a member of the firm of Hodenpyl, Hardy & Company in 1914 and was elected vice-president. When, in May, 1928, the company was acquired by the Allied Power & Light Corporation Mr. Hekma became a director and one of its vice-presidents. In addition, Mr. Hekma is vice-president of the Pennsylvania Gas & Electric Company and the Old Dominion Gas & Electric Corporation and is vice-president and director of the Commonwealth Power Corporation, Penn-Ohio Edison Company, Ohio River Edison Company, Consumers' Power Company, Electric Railway Securities Company, Iowa Public Service Company and American Electric Power Corporation. He is a member of the Michigan Society of New York and various clubs.

J. W. WELSH, general secretary of the American Electric Railway Association, has resigned, effective September 1, to take an executive post with the Cleveland Railway Company.

F. A. MERRICK, newly elected president of the Westinghouse Electric & Manufacturing Company, was guest of honor at a dinner held in the Duquesne Club of Pittsburgh on July 16 by local alumni of Lehigh University, his alma mater. More than 150 prominent Pittsburghers attended.

H. A. BLOOMSBURG has been appointed safety supervisor of the New York Power & Light Corporation with headquarters at Albany. His activities will cover not only the territory of the New York Power & Light Corporation but also that of the Utica Gas & Electric Company, the Syracuse Lighting Company, Inc., Cortland County Traction Company and the Eastern New York Utilities Corporation. Before joining the New York Power & Light Corporation he was chief engineer of the Utilities Mutual Insurance Company of New York and for a time was vice-president of the Davis Emergency Equipment

Company. For six years he has been a member of the executive committee on the National Electrical Safety Code.

R. B. SCANDRETT, vice-president American Gas & Electric Company, and JAMES C. BENNETT, vice-president Westinghouse Electric & Manufacturing Company, are among a party of about ninety American business men and financiers who left Berlin this week for Warsaw and thence will proceed to Moscow for a four weeks' tour of Russia.

B. P. ROUSE of Welch, W. Va., has resigned as manager of the Welch division of the Appalachian Electric Power Company, the resignation to become effective on the naming of his successor.

R. J. MULLINS has been named assistant to the vice-president of the Iowa Public Service Company, with headquarters at Sioux City. He was at one time manager of the Eagle Grove plant of the company and later held the position of division superintendent at Humboldt.

HOLLIS G. YOUNG has been appointed district manager of the Rochester Central Power Corporation with headquarters at Fillmore, N. Y. For several years Mr. Young was associated with his father in the Genesee Valley Power Company, which was later acquired by the Rochester organization.

J. K. WILSON has resigned his position as general sales manager of the Ohio Electric Power Company, Sidney, Ohio. Mr. Wilson had been with the company for the past seven years and during most of that time was associated with the Sidney offices. He served as commercial manager before he was appointed general sales manager.

GEORGE F. MOSHER, auditor of disbursements, was elected assistant treasurer of the General Electric Company at a recent meeting of the board of directors of the company. Following his graduation from Union College in 1918, Mr. Mosher entered the employ of the General Electric Company in 1919.

THEODORE P. FEDERER has been appointed merchandising manager of the Syracuse Lighting Company, Inc., Syracuse, N. Y., in charge of sales promotional activities. Mr. Federer has had extensive experience in electric and gas appliance merchandising with the Cohoes Power & Light Corporation, the Adirondack Power & Light Corporation and more recently with the New York Power & Light Corporation.

H. L. ANDREWS has been named engineer of the transportation engineering department of the General Electric Company, recently formed through the reorganization of the old railway engineering department. W. B. POTTER is appointed consulting engineer, with A. H. ARMSTRONG and W. J. DAVIS, JR., as associates and consulting engineers. Included in and as divisions of the transportation engineering department will be the railway equipment, the air-brake equipment and the industrial locomotive engineering departments at the Erie (Pa.) works and the automotive engineering department at the Lynn (Mass.) works.

JAMES ROBERT DOUGHTY has been transferred to the position of district manager of the Katahdin district, Maine and New Brunswick property group of the Central Public Service Corporation.

GUY E. DURGIN, who has been district manager of the Katahdin district, has been appointed central district manager of the Maine and New Brunswick property group of the Central Public Service Corporation.

C. E. NEILL, vice-president and general manager of the Royal Bank of Canada, has been appointed a director of the Shawinigan Water & Power Company to succeed the late Sir Lomer Gouin.

R. E. HAAS, director of public relations of the Columbia Gas & Electric Corporation, New York, has been elected secretary of the Public Utilities Advertising Association.

J. P. MCELROY, field engineer and pump tester in the power sales department of the San Joaquin Light & Power Corporation since 1925, has been appointed agricultural engineer to succeed E. G. STAHL, who has assumed new duties.

LEWIS A. LEWIS, sales manager of the Washington Water Power Company, Spokane, since 1919, has been appointed assistant general manager in charge of sales, according to an announcement made by D. L. Huntington, president. In his new position Mr. Lewis will be in charge of sales not only in Spokane but throughout the territory served by the company, in ten counties of eastern Washington and six counties of northern Idaho. Mr. Lewis is a graduate of Washington State College in electrical engineering and has been in the employ of the Washington Water Power Company since 1908.

FRANCIS MCQUILLAN has been appointed manager of the industrial sales department of the West Penn Power Company to succeed the late Thomas S. Henderson. Mr. McQuillin has been associated with the West Penn System since 1918, when he became identified with the Monongahela properties of the company, and in 1923 he joined the West Penn Power Company as power engineer. His former connections include the New York Railways Company, New York Edison Company and the Maintenance & Improvement Company of New York.

LELAND P. BANNISTER, formerly Atlanta sales manager and district manager in Ohio for the Kelvinator Corporation, has joined the staff of the National Electrical Manufacturers' Association. His duties will include matters relating to the merchandising activities of the new refrigeration division. Mr. Bannister has had extensive merchandising experience in the electrical appliance field, including organization work, training of salesmen and direction of refrigeration educational classes. After leaving the Kelvinator Corporation in 1927, he joined the Syracuse Washing Machine Corporation as district manager at Chicago, successively holding the positions of district manager at Louisville, Ky., branch manager at Kansas City, Mo., and Southeastern branch manager at Atlanta, Ga.

NEIL CURRIE, JR., managing engineer of the motor department of the Pittsfield works of the General Electric Company for the past five years, has been named manager of the Philadelphia works of the company. ROBERT V. GOOD, section superintendent in the Schenectady works, has been named assistant to the manager at Philadelphia. A graduate of the University of Minnesota, Mr. Currie entered the employ of the General Electric Company in 1908 through the purchase of the power apparatus department of the Western Electric Company. Mr. Good, a native of Germany, now an American citizen, entered the employ of the General Electric Company in 1913. He has been a section superintendent at Schenectady since January 1, 1928.

PANFILO TROMBETTA, formerly engineer in charge of development and design in the industrial control department of the General Electric Company, has recently been appointed manager of the control research department of the Allen-Bradley Company. Mr. Trombetta is a graduate of Ohio State University. He spent five years in the consulting engineering laboratory with Dr. Charles P. Steinmetz and later made a complete development of the theory of alternating and direct-current electromagnetic design. Mr. Trombetta will devote his time to the improvement of Allen-Bradley control apparatus, and extensive laboratory facilities have been made available to him in the new Allen-Bradley factory at Milwaukee.

Obituary

CHARLES LARZELERE, an electrical engineer connected with the General Electric Company with headquarters in Philadelphia, Pa., for several years, died in that city June 25. Mr. Larzelere was a graduate of Cornell University.

ARTHUR E. EASTMAN, a construction engineer on the staff of the New England Public Service Company, Augusta, Me., died recently at Cardinal, Ont., where he was thought to be recovering from illness. He was about 48 years of age and had been associated with important hydro-electric plant construction in the St. Lawrence Valley prior to joining the New England organization.

Financial and Statistical News

MARKET TRADING is decidedly more active than is normal this season, but prices have been somewhat irregular this week. Buying continues heavy in the utilities and several issues have made large net advances for the week. Niagara Hudson Power has been heavily traded in on an "if and when issued basis." Commonwealth & Southern has turned over in large volume with only marginal price change.

——TWELVE PER CENT MONEY has been almost disregarded as a potential check on buying. High money rates are attributed partly to the new currency issue and partly to demands for agricultural purposes.

——BOND TRADING IS STILL RATHER INDIFFERENT, although dealers anticipate something of a recovery in the next few months. New issues are being floated on a small scale.

Niagara Hudson Power Corporation Now an Actuality

The huge upper New York state power merger has now been consummated. According to the committee in charge of its organization more than two-thirds of the outstanding common stocks of constituent companies, Buffalo, Niagara & Eastern Power Corporation, Northeastern Power Corporation and Mohawk-Hudson Power Corporation, have been deposited by shareholders. The deposit date was extended until August 14.

Considerable trading interest has centered in the stock of the new corporation on an "if and when issued basis" on the New York Curb, the common selling up to around 28 and the two classes of warrants selling up to 9¾ and 73 respectively. The new group, it is claimed, will constitute one of America's largest producers of electric energy, around 6,300,000,000 kw.-hr.

Another Large Increase in Canada

The output of the central electric stations of Canada in May was 1,456,679,000 kw.-hr., an increase of 13.6 per cent over May of last year, according to the Monthly Review of Business Statistics, published by the Dominion Bureau of Statistics. Gains were shown in each of the economic areas in the Dominion. If allowance is made for the decreased exportation this year, it is found that the demand for energy within the country increased more than 17 per cent in the twelve months' period. The average daily output slightly exceeded that of April.

Puget Sound Power & Light Shows Higher Earnings

Substantial gains in gross and net earnings for May, with total gross of $1,299,108, an increase of $112,483 over May, 1928, have been reported by the Puget Sound Power & Light Company, Seattle, Wash. The balance for the month, after deducting all expenses and charges, was $647,983, or $101,418 more than the profits of the preceding May. Gross for the twelve months ended May 31 was $15,618,159, an advance of $686,708 over the preceding twelve months. Balance for the year was $4,028,932, an increase of $204,743. Prior earned surplus was $3,280,352, which brought the surplus to $7,309,284, and, after deducting retirement reserve of $1,018,000, left $6,291,284. Dividends paid in the twelve months included $449,999 on the prior preference, $1,816,414 on the preferred, and $405,658 on the common.

North American System Output Rises 13 per Cent

Electric output of the North American Company's subsidiaries was 6,450,000,000 kw.-hr. for the twelve months ended June 30, 1929, an increase of more than 13 per cent over the output for the preceding twelve months' period of the five groups of companies operating in California, District of Columbia, Missouri, Illinois, Iowa, Ohio, Wisconsin and Michigan.

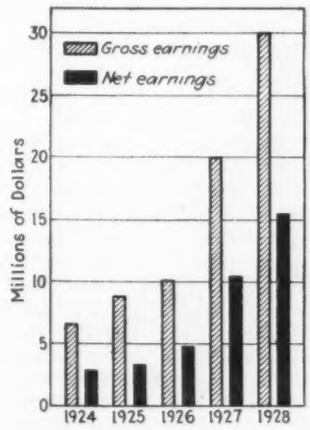
Output for the first half of 1929 was 3,332,800,000 kw.-hr., also an increase of more than 13 per cent over the output of the same companies for the first half of 1928.

Average weekly output of North American subsidiaries for six months this year exceeded 128,000,000 kw.-hr.

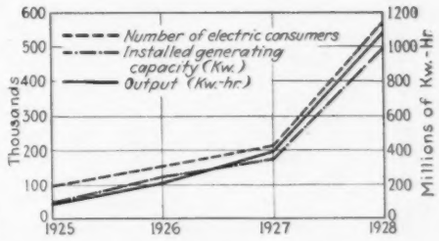
American & Foreign Power Investments Rose $177,379,212

THE American & Foreign Power Power Company Inc.'s annual report for 1928 reflects the policy of expansion followed during the past year by this subsidiary of the Electric Bond & Share Company. Gross earnings of subsidiaries controlled at the close of 1928 aggregated $30,112,578, as compared with $19,976,172 and with $10,183,775 for the subsidiaries controlled at the close of 1927 and 1926, respectively. These earnings were for the periods only during which the respective properties were owned. The expansion so apparent from the annual report has continued into the present year, with the result that the latest available reported twelve months' earnings of all companies controlled as of April 1, 1929, including companies which were under firm contract, were approximately $65,000,000. This figure does not include earnings of the electric power and light systems now owned by the International Settlement in Shanghai, China, but which the company takes over about July 1, 1929, if pending negotiations terminate satisfactorily. As the annual gross earnings of this property are about $8,000,000, the total annual gross earnings of the American & Foreign Power Company Inc. group, including this property, are now about $73,000,000.

The proportion of net earnings of companies controlled by American & Foreign Power Company Inc. as of April 1, 1929, including companies under firm contract (after deducting the



Five-Year Earning Record of American & Foreign Subsidiaries



The Growth in Business of American & Foreign Power Subsidiaries

amount applicable to minority interests and a reasonable amount for depreciation) which would have accrued to the company if it had controlled these companies for the twelve months ended April 1, 1929, was in excess of $26,000,000. The earnings of the International Settlement property are not included in this amount.

For the year 1928 the actual balance of earnings of the company and subsidiaries applicable to the company's common stock after all deductions, including depreciation and dividends on the company's second preferred stock, series A, applicable to the period whether paid or unpaid, was $1,528,009, as compared with $856,364 for the year 1927 and with $215,581 for the year 1926.

During 1928 the company increased its investment account from $108,186,628 to $285,565,840, an increase of $177,379,212. During 1928 the company extended its activities into Argentina, Chile, Mexico and Costa Rica. It also added substantially to the properties controlled in Brazil. As a result of this expansion the company at the end of 1928 controlled properties in Cuba, Argentina, Brazil, Chile, Mexico, Panama, Guatemala, Ecuador, Colombia, Venezuela and Costa Rica and owned minority interests in companies in five other countries. Since the close of the year additional properties have been acquired or contracted for in several of these countries and in the International Settlement of Shanghai, China.

The outstanding acquisition during 1928 consisted of the electric power and light and street railway systems in Santiago and Valparaiso, Chile, and vicinity, and the electric power and light systems in Vera Cruz, Tampico, Puebla, Cordoba and Orizaba, Mexico, and street railway properties in Tampico and Vera Cruz, previously controlled by Whitehall Electric Investments, Limited, of London. Total annual gross revenue of these properties is approximately $15,000,000, of which about 70 per cent is from electric power and light business.

Other acquisitions during 1928 included the majority of the outstanding securities of Mexican Utilities Company, whose operating subsidiaries own hydro-electric generating plants and an extensive transmission system in and adjacent to Guanajuato and other communities in Mexico. Electric power and light properties in a number of other communities in Mexico were acquired. Included in the additional properties acquired in Brazil were the electric power and light, street railway and telephone properties in Pernambuco, the electric power and light, gas and street railway properties in Port Alegre and the electric power and light and street railway properties in Curityba.

During the current year the company has acquired from Atlas Light & Power Company, Limited, another group of Argentine companies supplying electric power and light and street railway service in Cordoba, Tucuman, Santa Fe and Parana. It has also acquired control of the Northern Mexico Power & Development Company, Limited, and North State Power Company, Limited, whose subsidiaries supply electric power and light service in the State of Chihuahua, Mexico.

Including the properties taken over as of January 1, 1929, the total population served by subsidiaries of the company at the end of 1928 was 8,217,000. A total of 643 communities was served, including 627 supplied with electric power and light service. There were 571,995 electric power and light consumers, and the generating station output for twelve months was over 1,000,000,000 kw.-hr. The electric generating station capacity installed aggregated 494,451 kw. There was a total of 12,117 miles of electric transmission and distribution lines in service. The outstanding securities of the company were largely increased during the year. The $7 preferred stock was increased by 87,205 shares, the second preferred stock, series A, by 645,148 shares, and 36,866 shares of $6 preferred stock were issued. The number of outstanding option warrants for the purchase of common stock was increased by 662,534. During 1929 the company has raised $100,827,200 additional capital by the sale of units of securities, each unit consisting of one share of $7 second preferred stock, series A, and four-tenths of an option warrant for the purchase of the common stock of the parent company.

New York Buys Power for New Subways

Some Unusual Features in Contract for Load Exceeding 200,000 Kw. by 1940—Demand Clauses, Prompt Payment Discount, Cancellation Provisions Not of Common Type

THE Board of Transportation of the city of New York at a meeting on July 9, 1929, accepted the bid of the New York Edison Company and approved the contract under which the company will supply the power requirements of the new city-built subways. The contract now goes to the Board of Estimate and Apportionment for its action.

The city's program of subway building embraces the Eighth Avenue and Sixth Avenue lines in Manhattan, the Grand Concourse line in the Bronx, 53d Street line to Queens and the Fulton and Schermerhorn lines in Brooklyn. The question of power supply for these lines was studied by the city's consulting engineers, Stevens & Wood of New York City. Estimates of the relative cost of producing power in an assumed municipally owned station and of purchasing power from the power or transit companies in the area led to the invitation to the latter to submit bids in conformity with a proposed form of power contract drafted by the consulting engineers.

This contract reflects several features not common to the general run of contracts negotiated between power and railroad or traction companies. It is, of course, recognized that the local situation makes possible certain features favorable both to the city and the utility company. For example, the load contracted for ranges in the estimate from 18,000 to 210,000 kw., but at no time will it represent more than 10 per cent of the current load of the Edison company. It approximates closely the normal anticipated growth in demand on the whole system. Another factor is that the supply is to be taken at 60 cycles, 13,200 or 26,400 volts balanced three-phase at the 24 substations to be built at appropriate points by the Board of Transportation. Also, the lighting of stations and tunnels and other non-traction power is to be taken from the existing 60-cycle network in the territory and this will represent about 5 per cent of the total delivered at the single contract price.

The magnitude of the load on which the price and contract are predicated may be seen from the accompanying table of estimated values.

Estimated Values

Year Ending June 30	Maximum Demand in Kilowatts One-Hour Period	Annua Kilowatt-Hours
1931	18,109	64,405,000
1932	33,910	105,730,000
1933	71,959	216,580,000
1934	131,299	414,430,000
1935	148,207	555,260,000
1936	164,300	617,730,000
1937	179,925	673,360,000
1938	192,467	714,210,000
1939	202,544	759,150,000
1940	209,907	789,700,000

It is expected that the load factor will approximate 45 per cent, if computed in terms of the progressively increased maximum demands and monthly consumption.

The Edison company, in filing with its bid the required information to establish qualification and reliability, stated that its anticipated 1940 generating capacity and system demand would be respectively 3,847,000 and 3,100,000 kw. From this it can be seen that the company was in the favorable position of acceding to cancellation clauses favorable to the city and at the same time not forced to include the adverse factor of accelerated amortization in its price bid. In general, a twelve-months notice is to be given by the city when wishing to continue the contract beyond its original ten-year period or to terminate the purchase of power at any or all of the 24 ultimate points of delivery. A clause makes it necessary for the city to maintain the normal ratio of traction to lighting-and-appurtenance power. This ratio is not specifically stated, but is left as one of

several others to the exercise of the continued good faith and equity under which the contract was drawn and negotiated.

Determination of Demand

The "maximum monthly demand" is the maximum number of kilowatt-hours taken simultaneously at all points of delivery during any 60-minute (not clock-hour) period in any calendar month. "Abnormal demand" is defined as that occurring in any interval in which the demand exceeds by more than 10 per cent the normal demand not affected by such factors as unusual traffic conditions, strikes, floods, etc. The words "requisitioned demand" are used to refer to the capacity which the city shall notify the company to be ready to supply. The "billed demand" is either the recorded "maximum monthly demand" or the "requisitioned demand," whichever shall be the greater; except that "if at any time during the term of the contract 90 per cent of a previous maximum monthly demand not occurring during an abnormal period shall be in excess of the then effective requisitioned or recorded monthly demand, then and thereupon 90 per cent of such previous maximum monthly demand shall become and continue the billing demand unless and until exceeded by a higher demand."

This procedure in demand determinations in taking the single maximum differs from the common power-traction contract in which the average of the three maxima is taken. Apparently the risk of a higher billed demand avoided by the latter method is offset in the former by the exclusion of uncertainty factors in computing the demand and the costs.

The company is correspondingly obligated to provide adequate supply in a clause which stipulates that as long as the requisitioned demand of any substation is greater than the total installed rated capacity of converting units reduced by the amount of capacity in the two largest units the company shall provide one feeder for each installed converting unit. These two provisions jointly will apparently require a close check on the demands on the part of both parties.

Considerable latitude is left with respect to power factor, load balance and voltage regulation. "The load will have a power factor resulting from the normal operation of synchronous converters in electric railway service and in all cases shall be taken by the city commercially equally from all three phases. The contractor shall deliver commercially constant voltage at the respective points of delivery and the voltages of the three phases shall be substantially equal and symmetrically disposed in phase relationship."

Interruptions Liability

Interruptions shall be counted individually for each point of supply and if they are of five minutes or longer dura-

An Executive's Viewpoint of the Accountant's Work*

By Wallace C. Beckjord
Vice-President
American Light & Traction Company

ONE of the developments of recent years is the question of budgetary control. Most utilities now get out budgets well in advance of the beginning of a fiscal year showing the amount of money which the various construction and maintenance projects will require, and they usually justify these budget items by the savings which they will develop. This is all very good and very necessary, but of course if it is not followed up to see whether the expenditures have been kept within the budget limits, or that the savings justified have or have not been made, no definite check is obtained upon expenditures. It is quite essential that these checks be made, otherwise those who are responsible for making up these estimates, etc., may become a little bit careless and make their estimates of the cost of construction high in order to show a saving on the actual job, or make them low to start in order to justify the expenditure in the first place.

It would be well to develop a system which would automatically show the expenditures on each project by month and the savings involved if that can be shown, so that the executives can easily check up and see just how the construction department is functioning as to costs. Many utilities already do this, but some do not have their system developed as carefully as it should be. It is recommended that a careful study be made of this particular phase of budget control. . . .

Another factor that has always caused considerable misunderstanding is the question of allocation of overheads. There are many overhead charges that can be allocated directly to a particular job, but there are a great number that cannot be so allocated. The differentiation between time spent on operating matters and construction matters is sometimes not clearly drawn, and of course some of the activities of the company along construction lines are seasonal, particularly the activities of the distribution department. Summer time involves a very heavy construction period, whereas in winter the activities are very much curtailed.

The overhead, generally speaking, is the same the year around because in the winter time the engineers are planning for the summer's work, and of necessity this should properly be charged into construction accounts. Some method might be devised of deferred charges whereby the overheads could be included in a suspense account and made uniform throughout the year on the total construction amounts for the year instead of by months. In the early days the line of demarcation between construction and operation was not so clearly drawn, because the necessity for such detailed accounting work had perhaps not risen at that time, but with the great ramifications of the utility business today the importance of careful and accurate accountancy becomes greater and greater . . .

Another problem that merits serious and careful consideration by all utilities is that which might be termed perpetual inventory or continuous fixed capital records accounting. A great deal of valuation work has been done in years gone by; sometimes under stress of time engineers have prepared inventories more or less hurriedly and some of the elements could not be accurately ascertained because they were buried underground or hidden in walls of buildings or in foundation work and of necessity some estimate had to be made. . . .

The distinction between what is called maintenance and depreciation reserve fund is one that is not clearly drawn in many cases. In other words, an electric company may charge replacement of one pole or one crossarm or one insulator to maintenance, whereas replacement of two or three poles was charged to reconstruction reserve. In some cases the distinction is not quite so clearly drawn as this and it causes some confusion as to which account it should be charged to. . . .

The theory of reconstruction reserve is to spread out replacement of large pieces of apparatus over a number of years instead of actually charging it off when the replacement occurs, as many of the railroad companies do. Possibly it might simplify the procedure if there were only one account to cover both maintenance and reconstruction reserve, thus every replacement would be charged out of plant account at the cost at which it was installed, if that could be ascertained, or if an accurate record of the original cost is not available an estimate can be made and the cost of the new article would be charged at current prices.

**From an address before the Wisconsin Utilities Convention, Sheboygan, Wis., June 21.*

tion. If because of such interruption the city shall have been prevented from taking up to the amount of the company's obligation to supply, the penalty shall be a proportional reduction in the demand charge weighted to four times the duration of the interruption.

One clause particularly germane to all cases wherein a power company sells a railroad or railway its traction power is the following:

The essence of this contract is the provision by the contractor of adequate, safe and continuous supply of electric service and therefore it is distinctly understood and provided that the city shall hold the contractor harmless and shall defend him against any and all claims or suits arising from injuries to persons or damage to property, incurred or alleged to have been incurred through the operations of the railroad, whether the contractor's supply of electrical service shall be in default or not.

BILLING, PRICE OF POWER

The monthly bills rendered by the company are to include the meter readings of kilowatt-hour meters, the computed aggregate demand, the requisitioned demand in effect, the price of coal per ton f.o.b. New York Harbor and the average B.t.u. merit of the coal received. If payment is not made within 75 days from the end of the billed month interest at 4½ per cent is to be added by the city. If payment is made within 45 days from the beginning of the month in which the statement is rendered, the city is entitled to deduct from the amount due a discount of three-quarters of 1 per cent.

The bid price accepted by the Board of Transportation is $1.33 per month per kilowatt of billing demand plus 4 mills per kilowatt-hour based on a coal cost and B.t.u. content equivalent to 16 cents per 1,000,000 B.t.u. Adjustment is to be made on the basis of 0.0025 cent per kilowatt-hour for each full 1 per cent variation in the cost of the B.t.u. to the company. It is estimated that the average over-all cost of the subway power to the city over the ten-year period will be just under 8 mills per kilowatt-hour.

New Capital Issues

General Public Service Corporation Debentures.

Amount, $10,000,000.
Price, $102 and accrued interest to yield about 5.24 per cent.
Feature, convertible into common stock.
Due date, July, 1939.

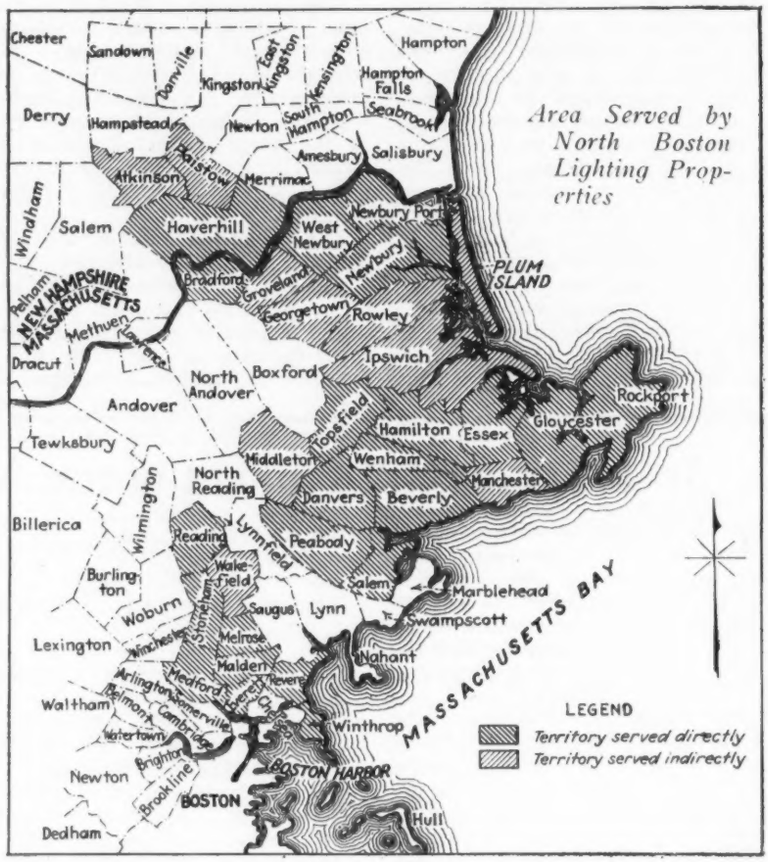
General Public Service Corporation is an investment trust. It now holds securities of fifty-four companies, largely common stocks of public utilities.

Federal Public Service Corporation First Lien Gold Bonds.

Amount, $4,250,000.
Price, $95 and interest to yield over 6.46 per cent.
Feature, an additional issue of the 6 per cent series of 1927.
Due, December 1, 1947.

Federal Public Service Corporation through its subsidiaries and others shortly to be acquired, furnishes electricity, gas, water, telephone, steam heating, ice or cold storage service to 166 communities in thirteen states having a combined estimated total population of over 550,500. Federal Public Service Corporation is controlled by Union Power Corporation, a large majority of the common stock of which is controlled by H. M. Byllesby & Company and E. H. Rollins & Sons.

North Boston Lighting Gains



NOTEWORTHY expansion of earnings in both gross and net is reported by the North Boston Lighting Properties for the calendar year 1928, and the territorial growth of this voluntary association under the management of Charles H. Tenney & Company, Boston, is a striking feature of the public utility map in eastern Massachusetts. In addition to the gas and electric companies hitherto grouped in this association at Malden, Revere, Beverly and Salem, the Haverhill Electric Company (including Newburyport) and Gloucester Electric Company now belong to this set-up. For 1928 the net income of subsidiaries was $3,027,338 and the balance available for preferred North Boston dividends was $2,784,510, or 4.07 times the $684,243 paid, leaving a balance for common dividends and reserves of $2,100,276. Both preferred and common stock holders share in rights, and the market value of these has been as follows from 1922 on: 1922, $0.50; 1923, $0.50; 1924, $1.25; 1926, $3.00; 1927, $2.25, and 1929, $3.75. In 1928 common dividends of $839,749 were paid on 373,222 shares outstanding.

Consolidated Statement of Earnings of Operating Companies

Year Ended June 30	Capital Stock Issued and Subscribed	Gross Earnings	Net Earnings	Interest, Etc.	Dividends	Balance
1920	$5,146,050	$4,217,088	$1,009,604	$184,904	$473,400	$351,299
1921	5,696,050	5,391,778	1,091,028	225,158	482,632	383,237
1922*	6,876,550	5,635,185	1,373,795	219,492	721,731	432,571
1923*	8,218,750	6,816,856	1,680,321	187,969	849,997	642,355
1924*	9,010,750	7,199,189	1,924,106	210,635	985,514	727,957
1925*	11,140,925	7,780,179	2,188,251	193,769	1,163,597	830,886
1926*	13,401,600	9,081,090	2,727,674	176,583	1,409,497	1,141,593
1927*	13,725,825	9,929,956	2,645,728	135,227	1,565,091	945,410
1928*	16,671,725	10,882,101	3,213,949	186,611	1,726,396	1,300,942

*Year ended December 31.

Note: Beverly Gas & Electric Company is included in 1923, 1924, 1925, 1926, 1927 and 1928, but not previously.
Salem Gas Light Company is included in 1926, 1927 and 1928, but not previously.
Gloucester Electric Company is included in 1928, but not previously.

Business News and Market Conditions

Metal Markets Stronger, with Prices Up

As a result of developments in the last week the outward appearance of the more important non-ferrous metal markets has been decidedly improved. The situation in copper appears stronger than it has in nearly four months, especially in business for immediate delivery. There is a tendency to associate this with the disappearance of excess supplies of copper metal at fabricating plants. Sales during the last week have been larger than in any corresponding period since April 10; tin prices have ruled about 2 cents per pound higher than in the preceding week; zinc sales have been in larger volume and progress has been made in eliminating the lower-priced metal that has dominated the market since April. The statistical position of lead in the domestic market is excellent, though the London market continues unpromising in this commodity. Weakness in antimony quotations persists.

NEW YORK METAL MARKET PRICES

	July 10, 1929 Cents per Pound	July 17, 1929 Cents per Pound
Copper, electrolytic	18	18
Lead, Am. S. & R. price	6.80	6.75
Antimony	8.50	8.44
Nickel, ingot	35	35
Zinc, spot	7.10	7.15
Tin, Straits	45.625	46.875
Aluminum, 99 per cent.	24.30	24.30

Base copper wire price July 17, 1929, 19¼ cents.

Power Plants in Esthonia

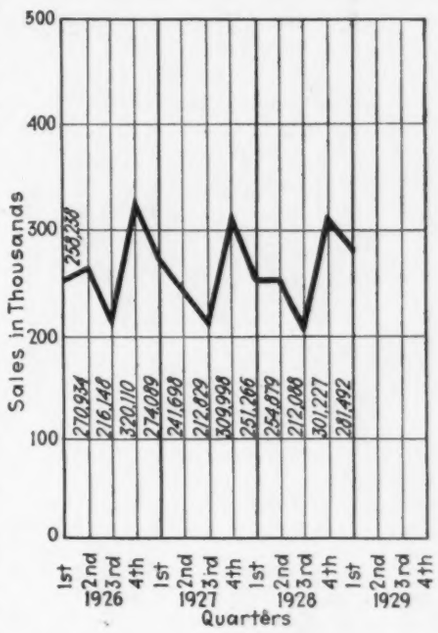
Twenty-one plants with an aggregate capacity of 17,584 kw. are listed in special circular No. 593 issued by the Electrical Equipment Division of the Bureau of Foreign and Domestic Commerce, relating to central light and power plants in Esthonia. The largest is rated at 9,700 kw. and only two others exceed 1,000 kw. Most of them are far smaller. Direct current at 220 volts predominates. Only four plants report alternating current, all of them at 50 cycles, three phase.

Insulated Wire and Cable Output $210,000,000

The accompanying tables show the production of insulated wire and cable in 1927 as reported by the Census of Manufactures. Table I gives statistics for 1927, with comparative figures for 1925, the latter being the same as those heretofore published. Table II gives statistics for 1927 only, retabulated by distributing the greater part of the large final item "Insulated wire and cable not reported separately by kind of insulation" as given in Table I. It is impracticable to compile strictly comparable figures for 1925.

The total value in the two years is almost identical; 1927 shows an increase amounting to about $5,550,000 in comparable figures on rubber insulated wire and an almost equal decrease in the value of weatherproof and non-weatherproof wire. Table I also shows a marked reduction in the output of flexible cord. The 1927 figures on these items are, however, materially increased by the inclusion of the products of plants which draw their own wire and which were not reported separately by kind of insulation for 1925.

Vacuum Cleaner Sales



Vacuum cleaner sales by quarters during the years 1926, 1927, 1928 and the first quarter of 1929. (Data supplied by Vacuum Cleaner Manufacturers' Association.)

1928 Sales of Electric Washing Machines

First quarter	193,282
Second quarter	204,337
Third quarter	217,360
Fourth quarter	194,905
Total for 1928	809,884

Table I—Insulated Wire and Cable

Production, by Kind and Value: 1927 and 1925

	1927	1925
Total value	$210,047,947	$210,617,310
Insulated wire and cable reported by kind of insulation (products of plants which purchase bare wire for insulating), value	$144,671,571	$148,636,833
Rubber insulated—		
Lighting and power circuit—		
Braided	34,567,996	29,017,142
Leaded	9,657,242	9,250,445
Telephone	8,477,349	8,627,849
Flexible cord (rubber insulation, cotton and silk covered)	8,501,250	15,671,325
Cotton insulated—		
Weatherproof and non-weatherproof	7,665,844	13,115,497
Slow-burning	3,207,244	441,986
Paper insulated—		
Lighting and power circuit and telephone and telegraph cable (including submarine)	52,394,096	52,114,844
Varnished-cambric insulated	6,737,042	5,152,708
Asbestos insulated	(1)	1,523,341
Magnet—		
Cotton and silk covered	7,723,830	8,673,450
Enameled	4,246,185	5,048,246
Insulated wire and cable not reported separately by kind of insulation (products of plants which draw their own wire)	(2) 66,869,869	61,980,477

(1) Included in value of "Insulated wire and cable not reported separately by kind of insulation" in order to avoid disclosing production of individual establishments.

(2) This value was reported in detail for 1927. (See Table II.)

Table II—Insulated Wire and Cable

Production, by Kind and Value: 1927

		1927
Total value	(1)	$210,047,947
Insulated wire and cable reported by kind of insulation, value		$202,712,730
Rubber insulated—		
Lighting and power circuit—		
Braided		46,538,829
Leaded		13,103,230
Telephone		8,863,029
Flexible cord (rubber insulated, cotton and silk covered)		11,461,221
Rubber insulated, not distributed by classes shown above		3,956,362
Cotton insulated:		
Weatherproof and non-weatherproof		27,071,556
Slow burning		2,494,479
Paper insulated—		
Lighting and power circuit and telephone and telegraph cable (including submarine)		59,624,158
Varnished-cambric insulated		9,373,242
Magnet—		
Cotton and silk covered		14,093,786
Enameled		6,132,838
Insulated wire and cable not distributed by kind of insulation	(2)	7,335,217

(1) The insulated wire and cable made by establishments which drew their own wire was not reported by kinds of insulation prior to 1927, and therefore no strictly comparable statistics, by kind of insulation, can be given for previous years.

(2) Includes value of asbestos-insulated wire, in order to avoid disclosing production of individual establishments.

Market Conditions

INDUSTRIAL BUYING of electrical equipment definitely improved on the Pacific Coast and shows brighter prospects in the Eastern district. Central-station business generally quiet but well up to normal in volume.

——MOTORS MOVING WELL IN EAST. Some sizable business in mill motors and apparatus expected shortly.

——THE FEATURE OF SOUTHEASTERN BUSINESS is quarter-million dollar transformer and oil circuit breaker order.

——INSULATOR SALES HEAVY IN NEW ENGLAND, other lines quiet.

——UTILITY CONSTRUCTION PROGRAMS ACTIVE IN MIDDLE WEST, demand centering in distribution equipment.

——POWER COMPANY BUSINESS HAS INCREASED somewhat in the Pacific Coast district as well as industrial orders.

EASTERN DISTRICT

Industrial prospects are taking the lead in the Eastern district and improved demand is developing in that quarter. Inquiries for motors, controls and auxiliary equipment indicate sizable commitments during the next 30 days. Iron and steel mills in the northern New York territory, Illinois, Indiana and Alabama districts are expected to be in the market for heavy type mill motors and other apparatus. A manufacturer of motors in New York has secured an order for a number of units for a paper mill installation in Pennsylvania. Another maker says that there is an excellent demand for motors for general machinery, electrical refrigeration and oil burner accounts. Business in fractional-horsepower units shows a slight decline, although the average turn-over is higher than that at this time a year ago.

Central-station business shows little change, except for a tendency to be a little spotty. A Middle West manufacturer of turbo-generator units has secured an order for an installation in Michigan to cost $305,000, a contract for condensers, totaling $69,300, going to an Eastern maker. A metropolitan central station has placed a contract with a state manufacturer for transformers and auxiliary apparatus to cost $75,000, while a utility company in Queens Borough has given an order for transformer equipment and parts for rebuilding service to cost $25,000. A manufacturer of pumping machinery has contracted with a New York producer of motors and auxiliary equipment for an installation for an Ohio central station to cost $40,000. A manufacturer of meters says that demand is light owing to reduced construction operations, and little improvement is anticipated before fall. A central station in eastern New York has placed a contract for meter units with a state manufacturer to cost $25,000.

Electric railway business continues to grow in immediate importance. The Delaware, Lackawanna & Western Railroad Company has placed an order for catenary supports for the electrification of its suburban lines in New Jersey with the American Bridge Company, totaling 4,000 tons, and will soon give orders for initial electric equipment. An electric signal company in Pennsylvania reports the receipt of heavy orders from railroads in the Eastern part of the United States and Canada. Demand for airport lighting equipment holds strong and is growing in volume. Construction projects are as follows:

The Continental Can Company, New York, plans expansions at its plants at San Jose, Calif., Seattle, Wash., and other points to cost $1,000,000. The Central Hudson Gas & Electric Company, Beacon, N. Y., plans a power substation at Newburgh, N. Y., to cost $40,000. The Twenty-third Street Association, New York, plans an improved lighting system. The General Baking Company, New York, will build additions to its plants at Indianapolis, Ind., Louisville, Ky., and Columbus, Ohio, to cost $1,000,000. The Fairchild Aviation Company, New York, will build a branch aircraft manufacturing plant at Longueuil, near Montreal, Que., to cost $150,000. The James Screen & Manufacturing Company, Jamaica, L. I., plans an addition to cost $60,000. The Public Service Electric & Gas Company, Newark, N. J., will make extensions in the ornamental lighting system at East Orange, N. J. The C. M. Gray Manufacturing Company, East Orange, N. J., will build an addition to its die-casting plant to cost $80,000. The Richardson Company, Cleveland, plans a battery box manufacturing plant at New Brunswick, N. J., to cost $100,000. The Atlantic City Electric Company, Atlantic City, N. J., will build a 132,000-volt transmission line from Woodstown to Pleasantville, N. J., to cost $500,000, with substation facilities. The Pennsylvania Railroad Company, Philadelphia, plans a substation on Bradford Avenue. The American Cigar Company, Philadelphia, will build an addition to its factory to cost $250,000. The Philadelphia Steam Company, Philadelphia, will make expansions in its power plant to cost $1,000,000. The Pennsylvania State College, State College, Pa., plans a power plant to cost $150,000. The Pittsburgh Tube Company, Pittsburgh, will build an addition to its steel tube mill at Monaca, Pa., to cost $200,000. The Flynn & Emrich Company, Baltimore, Md., will build an addition to its foundry to cost $90,000. The General Purchasing Officer, Panama Canal, Washington, will receive bids until August 5 for transformers, oil circuit breakers, lightning arresters, panel boards and other electrical equipment (Panama Schedule 1978). The Board of Water Commissioners, Erie, Pa., plans a bond issue of $1,700,000 for an electric pumping station. The Marienville Glass Company, Marienville, Pa., plans an addition to its plant to cost $150,000.

NEW ENGLAND

Buying in the New England district slackened and some slight falling off in all lines was reported by a number of manufacturers. Negotiations for heavy equipment are quiet, but inquiries concerning replacements, on the other hand, are steady and small orders for parts show an encouraging volume of business. Small motor sales are quieter than for preceding weeks. Several lot orders were reported, the total weekly sales volume exceeding $35,000.

Central-station equipment orders for heavy material were off during the past week. Insulator sales are steady and a number of additional orders supplementing previous orders for line extensions were reported and two lots of general control equipment for substation additions were recorded amounting to $2,500. An order for small panel switches for an eastern Massachusetts station, together with voltmeters, was noted. New construction materials are in active demand and poles, line-hardware and wire orders are numerous. Equipment for commercial buildings is attracting interest and floodlighting units are gaining in attention. Automatic street electrically timed traffic signal orders are reported by one manufacturer to be ahead of last year and recently six units were ordered for installation in an eastern Massachusetts city. Merchandising reports show an encouraging gain in volume over last year for the corresponding period. Construction projects are as follows:

Boston, Mass., plans an ornamental lighting system on Causeway Street. The Edison Electric Illuminating Company, Boston, plans an equipment storage and distributing plant to cost $120,000.

SOUTHEAST

Reasonably satisfactory business, but mostly small size orders, is reported for the Southeast. Some large orders are being placed by one of the large power companies in connection with a steam station project, four 23,000-kva. transformers costing $150,000 having been ordered and oil circuit breaker equipment aggregating $100,000 will shortly be ordered on this same job. One circuit breaker order placed was for $22,000, while a transformer repair parts order for $15,000 was also placed. An Alabama power company ordered two cars of bare and weatherproof copper wire, while a Mississippi company ordered one car of this material. Another order from Alabama was for house type meters amounting to $5,000. A Georgia

company ordered $5,000 of conduit for a substation job, while two satisfactory creosoted pine pole orders also were placed, one for $5,000 and the other for $4,300. A company in South Carolina ordered $2,500 in distribution transformers and a Tennessee company ordered circuit breakers amounting to $1,500. Gin motor business is looking up, though no individually large orders are reported. A north Georgia textile plant ordered $15,000 in motor equipment, while another cotton mill order from the same state was for wiring materials amounting to $12,000. Construction projects are as follows:

Hopewell, Va., plans a floodlighting system and beacon lamps at its proposed municipal airport to cost $70,000. The West Virginia Coal & Coke Corporation, Huntington, W. Va., plans extensions in its mining properties to cost $1,000,000. The Graham-Paige Motors Corporation, Detroit, plans a branch plant at Chattanooga, Tenn., to cost $200,000. The Smoky Mountain Power Company, recently organized, has acquired the municipal electric power plant at Bryson City, N. C., and plans extensions to cost $35,000. The Mississippi Power Company, Gulfport, Miss., plans a transmission line from Blue Mountain to Myrtle, Miss., and vicinity, to cost $65,000. West Point, Miss., plans extensions in its municipal electric power plant, to cost $30,000. The East Coast Preserving Company, Jacksonville, Fla., plans an addition to cost $80,000.

Middle West

The volume of business is gradually increasing in the Middle West, the present business indicating a substantial gain over the same period last year. The major activities continue in a favorable condition, although some recession in automotive production is noticeable. The utility companies are proceeding with their construction programs, maintaining a conservative attitude for future commitments. The demand for major apparatus is somewhat light, although distribution equipment is in good demand. The interesting orders placed include 100 10-kva., 100 15-kva., 100 25-kva., 100 37½-kva., 50 50-kva., 100 75-kva., 50 100-kva., ten 150-kva. pole type distribution transformers, 1,010 Thompson meters of 5 to 150 amp. capacity, 25 reverse power relays, 284 current transformers, several construction orders aggregating $50,000 and "Mazda" lamps valued at $125,000. Jobbers' sales are normal. Construction projects are as follows:

The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., plans rebuilding its power substation at West Allis, Wis., to cost $30,000. A. J. Bopp, General Motors Building, Detroit, and associates, plan a mill for the manufacture of striped steel, to cost $200,000. The Detroit Public Lighting Commission, Detroit, plans power substations to cost $75,000. The Detroit Steel Products Company, Detroit, will build an addition to cost $75,000. The Ex-Cell-O Aircraft & Tool Corporation, Detroit, plans expansions to cost $400,000. The Michigan Bell Telephone Company, Detroit, will build an equipment storage and distributing plant, with repair division, garage and service building, to cost $1,000,000. Schermack & Company, Detroit, will build an addition to its vending machinery manufacturing plant to cost $400,000. The Kunkel Manufacturing Company, Hart, Mich., will build an addition to its automobile heater plant to cost $85,000. The Detroit House of Correction, Detroit, plans a power plant at the institutional buildings at Plymouth, Mich., to cost $85,000. The Blackhawk Hockey Club, Chicago, plans an ice-manufacturing plant in connection with artificial skating rink to cost $700,000. The Chicago, Rock Island & Pacific Railroad Company, Chicago, plans extensions in its local shops to cost $350,000. The W. H. Salisbury Company, Chicago, will build an addition to its rubber goods plant, to cost $125,000. The Tabin & Picker Company, Chicago, plans a dress goods factory to cost $300,000. The Anderson "Herald," Anderson, Ind., plans a printing and publishing plant to cost $150,000. Purdue University, West Lafayette, Ind., plans a mechanical engineering building to cost $150,000. The Emery Industries, Inc., Ivorydale, Cincinnati, Ohio, plans a steam-operated electric power plant to cost $85,000. Cleveland, Ohio, plans a municipal repair shop and garage to cost $100,000. The Patterson Steel Products Company, East Liverpool, Ohio, plans a plant to cost $150,000. Ellendale, N. D., plans a municipal electric light and power plant. Chisholm, Minn., contemplates a municipal electric lighting plant. Granite Falls, Minn., will receive bids until July 25, for a generator direct-connected to water turbine, and generator direct-connected to Diesel engine, for the municipal power plant. The Betts-Blumer Engineering Company, Kearney, Neb., plans a power plant and ice-manufacturing plant at Creighton, Neb., and a power plant at Ponca and Wausa, Neb., to cost $150,000. Burlington, Iowa, plans an ornamental lighting system on Main Street. J. E. Decker & Sons, Mason City, Iowa, will build an addition to its lard factory to cost $300,000.

St. Louis District

In the St. Louis district orders of contract size have been placed as follows: A lot of switching equipment of the subway type costing $15,000, an electric enameling furnace of 620 kw. capacity for an Illinois factory costing $40,000, and four generators for Diesel engine connection of 500 kw. with switchboard costing $16,000. Manufacturers report that several good-sized jobs are being figured. The demand for contractors' and dealers' supplies are showing a decided increase. Household appliances are moving in good volume. Construction projects are as follows:

The Prest-O-Lite Company, New York, N. Y., plans a plant at Oklahoma City, Okla., to cost $120,000. El Dorado, Ark., plans a floodlighting system and beacon lamps at its proposed municipal airport to cost $100,000. The Bent Concrete Pipe Company, Fort Worth, Tex., plans a plant at West Dallas, Tex., to cost $100,000. The Southwest Dairy Products, Dallas, Tex., plans extensions in its plant at Oak Cliff, Tex., to cost $75,000. Jacksonville, Tex., plans floodlighting system and beacon lamps at its proposed municipal airport to cost $75,000. The John Deere Plough Company, Moline, Ill., plans a factory branch and distributing plant at San Antonio, Tex., to cost $100,000.

Pacific Coast

Power company purchasing on the Pacific Coast includes two carloads of pole line hardware for Oakland stock, a carload of high-tension insulators for Los Angeles stock, $90,000 worth of sector cable and $20,000 worth of circuit breakers for the Hawaiian Islands and $15,000 worth of Westinghouse control apparatus for Seattle.

Industrial buying has improved and includes twelve General Electric double motor car equipments for Sacramento valued at $30,000 and special motor applications valued at $3,000 for a south San Francisco steel company. Purchasing in the state of California is quieter after the June rush in order to use appropriations before the close of the fiscal year. The 1929-30 budget totals $10,000,000 worth of public buildings. Government buying includes an award of close to $100,000 to the La Tourette Fiscal Company for electrical work on the naval munition dump at Hawthorne, Nev., covering about 50 buildings and 80 magazines, also a $50,000 Westinghouse radio equipment for San Diego and material for the federal territorial building at Juneau, Alaska. The Southern Pacific company is equipping a number of its club and observation cars with special fixtures to carry out special decorative schemes and to provide scientific illumination and it is also installing an interphone system on each of its cascade limiteds to Portland. The Richfield company is buying a carload of pipe and $2,500 worth of rubber-covered wire for its new tank farm in San Francisco and expects to be in the market for several times these quantities.

Specifications for approximately $1,000,000 worth of apparatus for two 60,000-kw. units for the city of Seattle's Diablo hydro-electric project await approval of the City Council and a bid call is expected to be made within a month. The apparatus includes turbines, generators, transformers, switchboards, switching equipment, Johnson valves, etc. The Northwestern Electric Company, Portland, Ore., plans a bid call shortly for a 20,000-hp. unit to its steam plant in Portland. There is considerable activity in airport lighting and figures are being taken for installations at Boeing Field, Seattle, Tacoma, Medford, Oregon and Burbank, Calif., ranging from $15,000 to $30,000. The sales reported last week included one 300-kw. turbine to a lumber mill in Everett, Wash., approximately $100,000 worth of transformers and $30,000 worth of meters to the city of Tacoma, $25,000 worth of disconnecting switches to the British Columbia Electric Railway Company, $3,000 worth of disconnecting switches to central stations in the Puget Sound district, one 200-hp. synchronous motor to a lumber mill in Everett, twelve motors from 25 to 75 hp. to a furniture manufacturing plant in Tacoma, eleven from 65 hp. down for a lumber mill in Portland and about thirty single-phase machines for irrigation districts and pumping plants. The city of Seattle bought 56 subway type distribution

boxes and 320 cedar poles. Construction projects are as follows:

The Amphibian Aircraft Corporation, Los Angeles, plans a plant to cost $150,000. The Bates Valve Bag Company, Chicago, plans a plant at Los Angeles, Calif., to cost $100,000. The Fox Film Corporation, Westwood, Los Angeles, will build an electrical laboratory to cost $80,000. Miller-Schofield, Inc., Los Angeles, plans expansions program to cost $150,000. Centralia, Wash., is asking bids until Aug. 13 for hydraulic turbines, electric generators, transformers and auxiliaries. The Washington Water Power Company, Spokane, Wash., plans a 10,000 kw. capacity, outdoor type substation in the Hollywood district, to cost $100,000. The Aircraft Plywood Corporation, Seattle, Wash., contemplates a plant to cost $75,000. The Idaho Packing Corporation, Pocatello, Idaho, plans an addition to cost $50,000. The Chevrolet Motor Company, Detroit, plans a factory branch at Salt Lake City, Utah, to cost $175,000. The Utah Power & Light Company, Salt Lake City, Utah, plans an addition to its steam-operated electric power plant to cost $250,000. Salida, Colo., plans an automatic traffic lighting system. The Gillespie Land & Irrigation Company, Phoenix, Ariz., plans a power plant, to cost $80,000.

Activities of the Trade

American Transformer Sells New Stock Issue

An issue of 40,000 shares of the common stock of the American Transformer Company, Newark, N. J., has recently been placed on the market. The company was incorporated in 1901 and is engaged in the manufacture and sale of transformers and allied electrical products. Its specialty is testing transformers and special equipment to meet customers' requirements. It is not engaged in the quantity production of standard units in competition with the larger companies, but devotes its principal attention to special work where quality, customers' specifications or prompt delivery are essential.

The stock was issued to shareholders in exchange for the old stock and the offering involves no new financing.

Yale & Towne Purchases Stuebing-Cowan Company

An announcement has been made that the Yale & Towne Manufacturing Company, Stamford, Conn., has contracted to purchase the assets and good will of the Stuebing-Cowan Company of Cincinnati, Ohio, and Holyoke, Mass., maker of hand-lift trucks. The Yale & Towne Manufacturing Company has been making and distributing throughout the world for many years a line of material-handling devices consisting of hoisting apparatus, both hand and electrically operated, overhead trolleys and overhead trackage systems. About ten years ago a line of electric industrial trucks was added. The purchase of the Stuebing-Cowan interests will add a complete line of single- and multiple-lift hand trucks to its already large line of devices for the handling of materials.

The sales of its entire line of material-handling devices will continue to be under the supervision of James C. Morgan, and arrangements have been made under which the executive personnel of the Stuebing-Cowan Company will enter the services of the company, Walter C. Stuebing acting as assistant to Mr. Morgan, in charge of all truck sales, and William Stuebing continuing to act as superintendent of the plant in Cincinnati. A factory for the manufacture of hand-lift trucks and skid platforms is in process of construction in Cincinnati to care for the rapidly increasing business.

English General Electric Has Good Year

The extraordinarily wide range of the activities of the General Electric Company of England, surveyed by Sir Hugo Hirst at the firm's annual meeting, which was held in London, came as a surprise to many of those present. Among the contracts which the company has recently obtained is one amounting to £750,000 ($3,750,000) for an overhead distribution system for London and the south, in connection with the Electricity Board's scheme. Large cable orders also have been secured by the Pirelli-General Cable Works, conducted in conjunction with the Pirelli company, including one for 52 miles of 132,000-volt oil-filled cable, another for 25 miles of 66,000-volt cable, and yet another for 60 miles of cable for the municipality of Sydney. In addition, the company has obtained an important contract for the supply of telephone cables for the Egyptian State Railways. Another subsidiary, Fraser & Chalmers, has particularly developed the section devoted to mining machinery and conveying plant.

THE STANDARD UNDERGROUND CABLE COMPANY, Pittsburgh, a division of the General Cable Corporation, announces the discontinuance of its construction or cable installation department.

THE VAN DORN ELECTRIC TOOL COMPANY, Cleveland, announces that J. M. Beggs, formerly in its sales department, has been placed in charge of its advertising department. The company also announces the appointment of R. W. Procter, formerly of the Black & Decker Manufacturing Company, as general sales manager of its company.

General Electric Orders Increase 32 per Cent

Orders received by the General Electric Company for the three months ended June 30 amounted to $119,351,248, compared with $90,431,957 for the corresponding quarter of 1928, an increase of 32 per cent, President Gerard Swope has announced. For the six months ended June 30, the orders received amounted to $220,716,456, compared with $170,357,797 for the first six months of last year, an increase of 30 per cent.

THE INGERSOLL-RAND COMPANY, 11 Broadway, New York City, has received an order from the Illinois Central Railroad Company for five 600-hp. oil-electric locomotives. The equipment will be furnished in conjunction with the General Electric Company.

THE KELVINATOR CORPORATION, Detroit, announces that J. C. Burton, former merchandise manager of the Detroit Edison Company, Detroit, has joined its organization as district manager for the Philadelphia territory. Mr. Burton succeeds Campbell Wood, who has become the manager of the utilities division of the corporation. The district to which Mr. Burton has been assigned includes all of eastern Pennsylvania, southern New Jersey, Delaware, Maryland and the District of Columbia. His headquarters will be at Philadelphia.

THE AUTOMATIC ELECTRIC HEATER COMPANY, Pottstown, Pa., anonunces the appointment of the Clyde L. Chamblin Company as its northern California representative. Listenwalter & Gough, Inc., has been appointed California distributor, with offices in San Francisco and Los Angeles, and Paul V. Quick, who formerly represented Landers, Frary & Clark in the Western territory, has been appointed Western manager.

THE COOK PORCELAIN INSULATOR CORPORATION, Cambridge, Ohio, manufacturer of high-tension insulators, announces that H. S. Perkins, electrical engineer for twenty years, actively identified with electric transmission line and station development on the Pacific Coast, has been appointed general sales manager of the company.

THE TIMKEN ROLLER BEARING COMPANY, Canton, Ohio, announces that R. C. Brower has been promoted from general manager to assistant secretary and assistant treasurer of its company. W. H. Richardson, formerly manager of its New York branch, has been made its general manager with headquarters in Canton, Ohio. E. H. Austin, manager of the Kansas City branch, has been made manager of the New York branch and L. J. Halderman, manager of the Atlanta, Ga., branch, has been made manager at Kansas City. Parker T. Ancarrow, manager of the Richmond, Va., branch has been made manager at Atlanta and Stewart B. Ancarrow has become manager of the Richmond branch.

New Equipment Available

Small Starter Throws Motors Across the Line

A new manual starting switch designed particularly to meet the demand for a small device which will throw motors across the line is announced by the General Electric Company. The switch bears the designation CR-1038-E-1 and has a maximum rating of 1 hp., 110 volts and 2 hp., 220 to 600 volts, three phase.

The device consists of a tumbler switch and two small thermal cut-outs

mounted on a common textolite base. By means of suitable interlocks the switch can be locked in either the open or closed position.

In designing the switch, special attention was paid to the cut-outs to make them particularly reliable. The links are made of tinned copper to prevent oxidation and the contact spring and post are also tin plated for the same reason.

Non-Breakable Resistor for Railway Service

An edgewise-wound non-breakable and non-corrodible resistor weighing about one-half as much as cast-grid resistors of corresponding capacity has been introduced by the General Electric Company. It is particularly suited to railway applications where vibration and exposure to the elements tend to shorten the life of the more fragile cast-grid types. The six-unit resistor weighs approximately 47 lb. and the four-unit one approximately 37 lb.

Space is conserved by having the units elliptically shaped. The special alloy ribbon has a temperature coefficient which results in only a slight variation in resistance whether hot or cold and the specific resistances of the alloy are extremely high, so that it is possible to use a relatively large cross-section for the conductor. Rigidity, with sufficient thermal capacity to care for abnormal conditions, such as large currents on the grades, pulling in dead cars, etc., is thus obtained, according to the manufacturers.

Explosion-Tested Type Controller for Small Motor

Adding to their line of explosion-tested type motors and controllers, the Westinghouse Electric & Manufacturing Company announces a new controller of the drum type which provides across the line starting for a small d.c. motor. The controller is provided with fuses mounted inside of the controller case and interlocked with a screw-type cover to meet the requirements of the U. S. Bureau of Mines for explosion-tested equipment. Accessibility is one of the features of this small controller, which is provided for by mounting the entire controller on the bottom base. The bottom base is threaded to screw into a cylindrical case. Removing this case uncovers the entire controller for inspection or maintenance.

The controller is designed as a small, compact unit for application or permissible type conveyors, pit car loaders, room hoists, small pumps and similar types of apparatus where explosion test equipment is required.

Insulating and Protecting Coatings for Metal

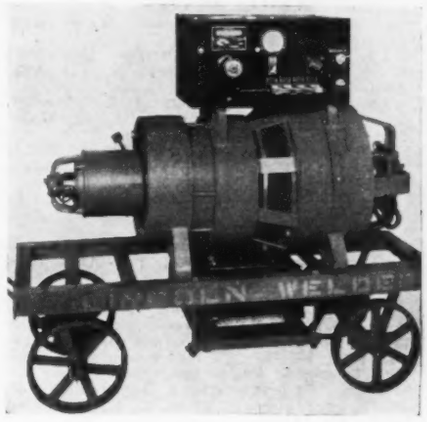
For sealing joints in gas mains, for painting structural iron, motors, oil tanks, metal parts of ships exposed to oil or vapors, fire hydrants, ship hulls, mine machinery and similar equipment requiring sealing and insulating paint the General Electric Company is offering a series of lacquers in colors for use where an oil-resistant, highly protective, durable and flexible insulating coating is demanded. The base of the new lacquers is an alkyd resin produced from phthalic anhydride and glycerine developed in the research laboratories of the company and marketed under the trade name "Glyptal."

THE IDEAL E-Z WIRE STRIPPER, which has triplicate action of clamping the wire, cutting the insulation and stripping automatically, timed and performed with one squeeze of the handle is announced by the Ideal Commutator Dresser Company, Sycamore, Ill. The tool is constructed to protect both the operator's hands and the wire. The cutting edges are shielded and the blind centers of the V notches on the blades prevent cutting or scarring of the wire. Standard models strip from 10 to 20 gage solid core or standard wire and can be converted to handle larger sizes by enlarging the holes. There are two standard sizes, No. 1 and No. 2, for stripping various sizes of wire.

"Stable-Arc" Welders Feature Unified Control

Announcement has just been made by the Lincoln Electric Company, Cleveland, Ohio, of its new, improved Lincoln "Stable-Arc" welders. Several new features of design and construction are alleged to increase the stable-arc features.

The unification of the controls of both motor and generator is one of the outstanding features. The working mechanism of all controls is contained in



a ventilated inclosed steel cabinet with hand regulators and switches mounted on a panel which forms a side of the cabinet. The control panel contains rheostat regulator diverter switch, safety starter switch, volt-ammeter and wing nut terminals for cables. This unified control greatly increases the simplicity of the operation of the welder, it is claimed. The control cabinet is mounted directly over the motor-generator for easy access by the welding operator. This also permits the removal of the motor-generator armature without disturbing any other parts.

The use of the combined voltmeter and ammeter, known as a volt-ammeter, makes possible the reading of the amount of voltage and amperage of one dial and eliminates the use of the separate delicate ammeter which would be given excessive wear on a Lincoln welder, due to the large output keeping the ammeter jammed against the high limit pin on the dial. In this way the volt-ammeter insures longer instrument life. The face of the volt-ammeter is mounted flush with the control panel.

Terminals for the lead cables are equipped with winged nuts, a feature which makes quick and easy connection possible, especially when it is desired to reverse the polarity of the welding current. The use of these wing nut terminals also eliminates the necessity of a switch for reversing polarity.

Electrical Patents

Announced by U. S. Patent Office

(Issued July 9, 1929)

1,719,835. LIGHTING FIXTURE; C. P. English, Cleveland, Ohio. App. filed June 20, 1927.

1,719,840. HOLDER FOR ARTICLES OF STATIONARY; C. Horix, Chicago, Ill. App. filed April 11, 1927.

1,719,851. THERMOSTATIC SWITCH; E. C. Raney, Columbus, Ohio. App. filed Sept. 25, 1926.

1,719,855. AUTOMATIC MOTOR-CONTROL SYSTEM; C. Schiebeler, Berlin, Germany. App. filed Jan. 13, 1927.

1,719,859. FUSE HOLDER; C. A. Tozer and P. Hunter, Muskogee, Okla. App. filed Aug. 24, 1925.

1,719,863. FURNACE ELECTRODE CARRIER; E. Wirz, Baden, Switzerland. App. filed Dec. 27, 1926.

1,719,866. CONTROL OF ELECTRIC POWER; E. F. W. Alexanderson, Schenectady, N. Y. App. filed March 9, 1927.

1,719,872. ELECTRIC HEATER; W. C. Calcott, Gary, Ind. App. filed July 5, 1928.

1,719,888. ELECTRIC FURNACE; C. L. Ipsen and A. N. Otis, Schenectady, N. Y. App. filed Oct. 10, 1925.

1,719,889. MULTISPEED MOTOR CONTROL; C. A. Kelsey, Schenectady, N. Y. App. filed Oct. 6, 1927.

1,719,890. ELECTRIC METER; I. F. Kinnard, Lynnfield, and W. H. Pratt, Lynn, Mass. App. filed July 12, 1926.

1,719,892. TRANSFORMER FOR FEEDING POLYPHASE RECTIFIERS; J. Kübler, Baden, Switzerland. App. filed Feb. 2, 1922.

1,719,905. DYNAMO-ELECTRIC MACHINE; L. Schombourger, St. Ouen, France. App. filed April 6, 1927.

1,719,912. CIRCUIT PROTECTION; O. C. Traver, Schenectady, N. Y. App. filed April 5, 1926.

1,719,915. ELECTRIC GROUNDING CONNECTION; W. H. Vibber, New London, Conn. App. filed Feb. 6, 1925.

1,719,917. INDUCTION-MOTOR-CONTROL SYSTEM; W. Weiler, Niederschonhausen, Berlin, Germany. App. filed May 2, 1927.

1,719,942. ELECTRIC CIGAR LIGHTER; B. F. Muldoon, Mountain View, N. J. App. filed April 30, 1927.

1,719,945. INSULATOR; G. H. Schoenthaler, Rochester, N. Y. App. filed April 14, 1919.

1,719,951. APPARATUS FOR FINDING THE DIRECTION OF SOUND; W. L. Walker, New York, N. Y. App. filed April 22, 1925.

1,719,959. ELECTRIC SWITCH; F. J. Bast, Brooklyn, N. Y. App. filed March 11, 1927.

1,719,963. COMPOSITE ELECTRICAL BRUSH OR CONTACT AND METHOD OF PRODUCING SAME; W. B. Brady, New York, N. Y. App. filed March 29, 1926.

1,719,970. PROCESS OF PRODUCING CALCIUM CARBIDE AND PIG IRON; H. Eldridge, Oakland, Calif. App. filed March 8, 1927.

1,719,984. MANUFACTURE OF RUBBER GOODS; P. Klein and A. Szegvari, Budapest, Hungary. App. filed June 5, 1925.

1,720,000. VIBRATION AND SAG RESISTANT FILAMENT; J. H. Ramage, Bloomfield, N. J. App. filed July 28, 1926.

1,720,003. BATTERY-POST CONNECTER; E. F. Rhoades, Providence, R. I. App. filed Oct. 18, 1927.

1,720,030. SPRINGLESS SAFETY CLAMP FOR LIVE WIRES; H. W. Bodendieck and M. T. Tipsord, Taylorville, Ill. App. filed Feb. 10, 1926.

1,720,036. MEANS FOR INDICATING AT A DISTANCE THE AMPLITUDE OF MOVEMENTS IN ALTERNATIVE DIRECTIONS; H. Dreyer, Munich-Harlaching, Germany. App. filed May 3, 1926.

1,720,039. WELDING ROD; J. B. Green, Chicago, Ill. App. filed Dec. 10, 1925.

1,720,045. DOUBLE-WALLED ELECTRICALLY-HEATED VESSEL; J. H. Karlson, Chicago, Ill. App. filed Feb. 25, 1928.

1,720,047. SAFETY DEVICE TO PROTECT CARRIER ENTRANCE; C. H. Langs, Chicago, Ill. App. filed Feb. 28, 1924.

1,720,057. THERMOSTATIC SWITCH; E. J. Ray, Beverly, Mass. App. filed Dec. 7, 1922.

1,720,067. BATTERY CLIP; E. C. Weisgerber, Long Beach, Calif. App. filed June 15, 1926.

1,720,072. CONDUIT FITTING; J. W. Cox, Erie, Pa. App. filed March 27, 1925.

1,720,092. ELECTRIC HEATER; D. U. Powell, Woodsfield, Ohio. App. filed April 2, 1928.

1,720,180. AIR-ACTUATED SWITCH; W. Keiser, St. Louis, Mo. App. filed March 14, 1925.

1,720,181. INSULATOR; W. D. Kyle, Milwaukee, Wis. App. filed Jan. 25, 1926.

1,720,186. HEAT-DISSIPATING MEANS FOR ELECTRODES; S. Mooneyhan, Port Arthur, Tex. App. filed April 24, 1928.

1,720,189. ELECTRIC-MOTOR-CONTROL SYSTEM; A. H. Jackson, London, England. App. filed March 5, 1926.

1,720,213. SUPPORTING ELEMENT FOR HOLLOW ELECTRIC CONDUCTORS AND APPARATUS FOR MANUFACTURING THE SAME; A. Fuchs, Berlin-Siemenstadt, and F. Hanff, Berlin-Charlottenburg, and G. Lanz, Berlin-Lichterfelde, Germany. App. filed June 17, 1926.

1,720,216. TARNISH-RESISTING SILVER PLATE AND PROCESS FOR PRODUCING SAME; D. Gray and R. O. Bailey, Oneida, and W. S. Murray, Utica, N. Y. App. filed Nov. 5, 1923.

1,720,217. SELF-STARTING SYNCHRONOUS MOTOR; P. P. Horni, Newark, N. J. App. filed Dec. 24, 1927.

1,720,222. WELDING APPARATUS FOR ATTACHING TIE PLATES TO STEEL RAILROAD TIES; L. Kuhl and C. Ritz, Berlin-Charlottenburg, Germany. App. filed May 10, 1927.

1,720,259. DISTANT INDICATING DEVICE; H. Böhme, Berlin, Germany. App. filed Oct. 5, 1928.

1,720,263. ELECTRIC CIRCUIT BREAKER; H. P. Chandler, Mansfield, Ohio. App. filed April 3, 1925.

1,720,294. THERMOSTATIC SWITCH; C. S. Sanders, Midwest, Wyo. App. filed Aug. 22, 1927.

1,720,303. LIGHTING FIXTURE; A. K. Sutherland, Milwaukee, Wis. App. filed April 19, 1926.

1,720,312 and 1,720,313. ANODE FOR CHROMIUM PLATING; F. M. Becket, New York, N. Y. Apps. filed Oct. 14, 1926.

1,720,325. METHOD AND APPARATUS FOR DETERMINING THE POSITION OF FLUID-BEARING SANDS WHILE DRILLING WELLS; J. D. Hackstaff and L. T. McCutcheon, Los Angeles, Calif. App. filed Oct. 19, 1927.

1,720,334. ELECTRIC HEATER; W. Langensiepen, Dresden, Germany. App. filed March 30, 1927.

1,720,354. METHOD AND APPARATUS FOR ELECTRODEPOSITING CHROMIUM; K. W. Schwartz, New York, N. Y. App. filed April 30, 1927.

1,720,363. BATTERY BOX; P. H. Henkel, Erie, Pa. App. filed Jan. 6, 1928.

1,720,364. EXPLOSIONPROOF MINING APPARATUS; M. P. Holmes, Claremont, N. H. App. filed May 6, 1915.

1,720,371. SEMI-SOLID ELECTRIC CONDUCTOR; H. N. Miller, Chicago, Ill. App. filed Aug. 29, 1927.

1,720,381. RESISTOR; R. Simpson, River Forest, Ill. App. filed April 28, 1927.

1,720,395. NOISELESS SWITCH; R. F. George, Seattle, Wash. App. filed June 14, 1926.

1,720,413. ELECTRICALLY-OPERATED CIRCUIT INTERRUPTER; T. T. Greenwood, East Templeton, Mass. App. filed Oct. 30, 1926.

1,720,416. ELECTRIC HEATING APPARATUS; J. L. Harvey, Milwaukee, Wis. App. filed May 31, 1927.

1,720,430. PROCESS OF MANUFACTURING CURVED ELECTROTYPE PLATES; B. J. O'Brian and G. E. Funk, Kansas City, Mo. App. filed April 20, 1928.

1,720,446. ELECTRIC-ARC WELDING TRANSFORMER AND CONTROLLING DEVICE; R. Sarazin, Neuilly-Sur-Seine, France. App. filed June 8, 1927.

1,720,463. COMBINED RECEPTACLE AND PILOT LIGHT; T. A. Both, Stratford, Conn. App. filed Feb. 10, 1926.

1,720,470. FLASHER PLUG; A. W. Franklin, New York, N. Y. App. filed May 3, 1928.

1,720,501. CURRENT REGULATOR FOR ELECTRIC LAMPS; C. L. Weichelt, Philadelphia, Pa. App. filed March 29, 1926.

1,720,509. PROTECTIVE DEVICE; G. A. Burnham, Saugus, Mass. App. filed Dec. 14, 1921.

1,720,511. ELECTRIC SWITCH; C. S. Cross, Brooklyn, and C. A. Smith, Jamaica, N. Y. App. filed May 19, 1925.

1,720,512. SURFACE-UNIT TERMINAL; F. W. Cuffe, Waynesboro, Va. App. filed July 19, 1928.

1,720,520. STORAGE-BATTERY-CHARGING SYSTEM; L. Von Ohlsen, New Haven, Conn. App. filed Jan. 17, 1925.

1,720,521. STORAGE-BATTERY-CHARGING SYSTEM; A. V. Livingston, New Haven, Conn. App. filed June 2, 1925.

1,720,541. ELECTRICAL SWITCH; C. B. Coates, Cleveland, Ohio. App. filed Aug. 2, 1926.

1,720,555. SYSTEM OF MOTOR CONTROL; B. W. Jones, Schenectady, N. Y. App. filed Jan. 22, 1926.

1,720,566. CIRCUIT-CONTROLLING DEVICE; J. M. Pestarini, St. Ouen, France. App. filed Oct. 10, 1927.

1,720,570. SPOT WELDER; R. H. Pratt, Pelham Manor, N. Y. App. filed Oct. 22, 1927.

New Trade Literature

ELECTRIFICATION.—Circular No. 1859 issued by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., covers the electrification of the Atlantic City, N. J., convention hall. This circular, with many illustrations, describes the lighting scheme of the hall. The interior and exterior floodlighting, as well as the control system for all the lights, is explained and illustrated.

GRAPHIC INSTRUMENTS. — Bulletin No. 629 issued by the Esterline-Angus Company, Indianapolis, Ind., describes the use of graphic instruments in the newspaper industry.

COMPENSATORS, TRANSFORMERS, ETC.—The General Electric Company, Schenectady, N. Y., is distributing the following bulletins: GEA-416B describes the CR7051 automatic starting compensators for squirrel-cage induction motors; GEA-488A describes its current and potential portable instrument transformers; GEA-897 covers its small air-cooled transformers and auto-transformers, GEA-720A describes its high-speed circuit breakers, GEA-571C covers the G-E arc welding accessories; GEA-724B describes its totally inclosed, fan-cooled squirrel cage motors, "900 series" frames; GEA-752A covers its type BD direct-current motors, GEA-876C describes its type WD-400A arc welder; GEA-938A describes its accessories for switchboards, GEA-1047 covers its current-limiting resistors and fusible cutouts; GEA-1009A covers the G-E type WD-300A arc welder driven by a "Buda" model gas engine; GEA-1061A covers its types CD and CDP recording instruments; GEA-1078 describes its oil-pressure reservoirs for high-tension cable joints, GEA-1134 describes its types IC-5 and IC-5-Y1 single-phase directional-ground relays; GEA-907B covers the G-E "Novalux" 24-in. aviation beacon; GEA-1123 covers its fusible cutouts and current-limiting resistors for outdoor switching equipment and GEA-1113 describes connectors and fittings for G-E outdoor switching equipment.

Foreign Trade Opportunities

Following are listed opportunities to enter foreign markets. Where the item is numbered, further information can be obtained from the Bureau of Foreign and Domestic Commerce, Washington, by mentioning the number:

An agency is desired in Toronto, Canada (No. 39,457), for door bells and signal systems.

Purchase is desired in Rio de Janeiro, Brazil (No. 39,456), of flood lights for air field.

An agency is desired in Montreal, Canada (No. 39,461), for fuse plugs.

An agency is desired in Winnipeg, Canada (No. 39,462), for household electrical appliances and another (No. 39,460), for electrical mining equipment and wiring devices and fixtures.

An agency is desired in Hamburg, Germany (No. 39,521), for household electrical appliances.

Purchase is desired in Prince Rupert, Canada (No. 39,529), of household electrical appliances, and hydro-electric equipment and supplies and another (No. 39,530), of household electrical appliances.

Purchase or agency is desired in Prague, Czechoslovakia (No. 39,531), for lighting accessories.

An agency is desired in Calcutta, India (No. 39,517), for electric motors.

Purchase and agency are desired in Montreal, Canada (No. 39,544), for electrical motors and generators.

Purchase and agency are desired in Hamburg, Germany (No. 39,458), for electric phonograph motors.

Purchase is desired in Caracas, Venezuela (No. 39,532), of phonographs with sound amplifiers.

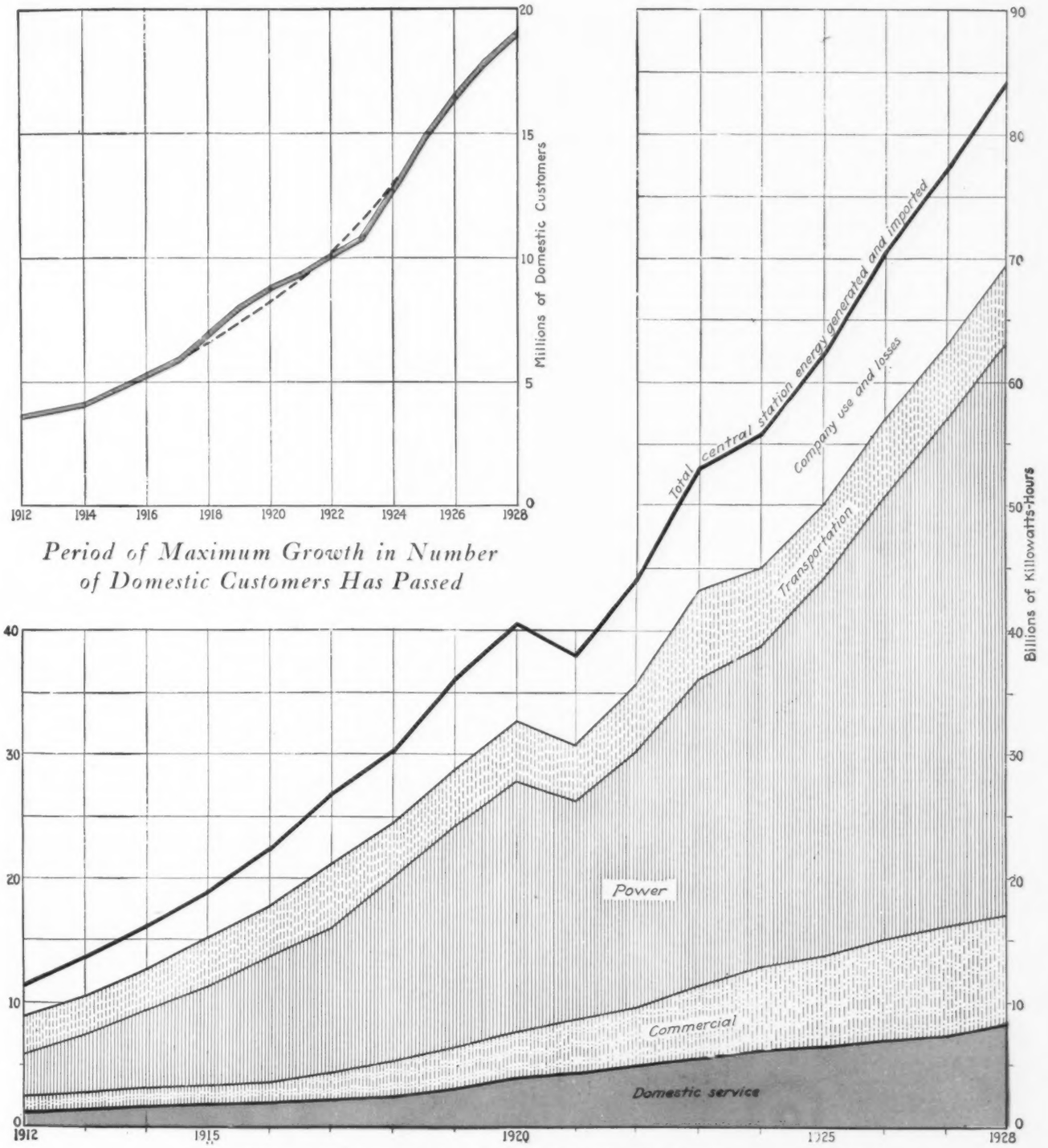
Purchase is desired in Levallois-Perret, France (No. 39,459), of electric warehouse trucks.

Business Facts for Electrical Men

Selected Statistics Presented Graphically for
the Use of All Interested in Analyzing the
Trend of the Electrical Business

The Solution: More Energy per Customer, in the "All-Electric" Home

Period of Maximum Growth in Number of Domestic Customers Has Passed



Our Homes Use Only One-Eighth of the Energy Sold

A Great Potential Market for Energy

Complete Electric Service in the Home Would Multiply Present Use Manyfold

THE efforts made in recent years by electric light and power companies to increase the residential load and to improve its distribution in the daily and yearly cycle have already borne fruit. The average per customer has been gradually rising, despite the dilution due to the small use of many of the new customers. Heretofore it has been possible to build up the load by steadily adding new users.

Although that kind of growth is continuing and in some regions is still rapid, in others it has perceptibly slackened, so that a year's increase is only 4 or 5 per cent. So long as the drift to the cities persists, that and the natural growth of population will add new customers, though at only a moderate rate compared with the past.

Meanwhile vast possibilities can gradually be developed in extending the use of electric energy in homes already served. The usual consumption now is around 450 to 500 kw.-hr. annually. By fuller use of small appliances, and particularly by a complete utilization of electricity for heating water and for cooking, it is estimated that this can be raised to 7,800 kw.-hr. The increase is not one of a few per cent. It is a multiplication, fifteen- or twenty-fold. How this may be done was discussed in the ELECTRIC WORLD of May 25, 1929.

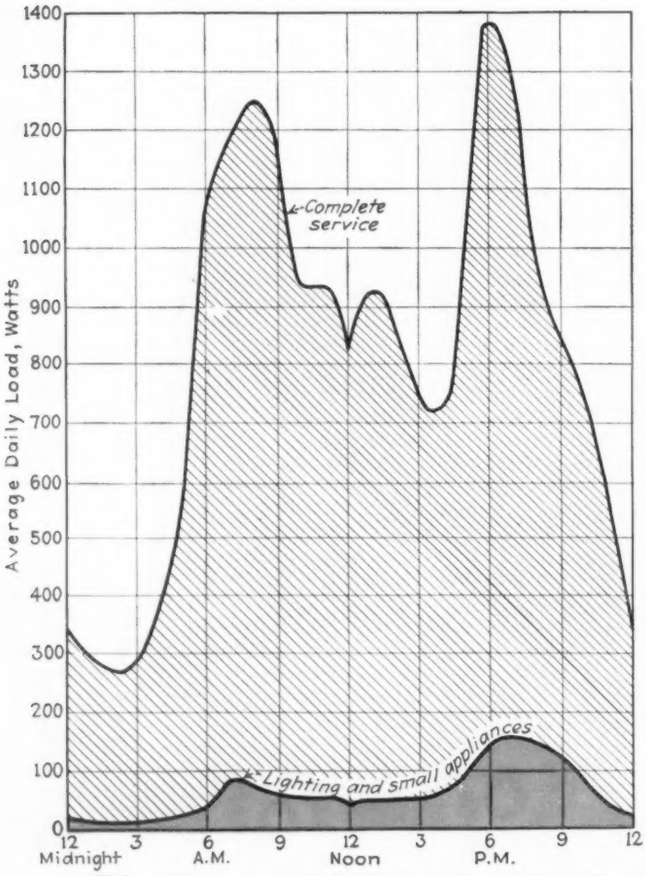
The process will necessarily be gradual. It will require thoughtful planning and capable salesmanship. But if accomplished it will make the domestic sales comparable with those for large power. At present the former are only a fifth of the latter. Further, this new load will multiply the maximum demand only sevenfold, while enlarging the annual use in much higher ratio, resulting in a greatly improved load factor. It will probably smooth out the mid-winter peak. In short, it will increase sales without proportionately increasing the investment.

To secure the ultimate large loads the electrical habit must be thoroughly established. Smaller appliances must be used to the full; not only sold but kept in service. Durability of every part is therefore essential, since failures reduce loads and check further progress.

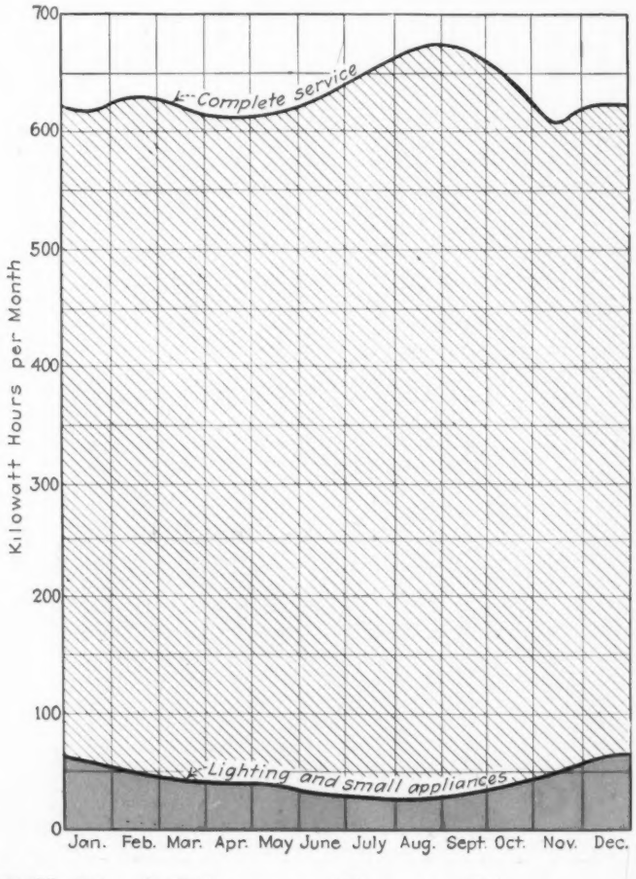
The Contrast

Light and Small Appliances	Complete Electric Service
450 Kw.-hr. per year	7,800
22.5 Annual load factor, per cent	52
0.2 Kw. maximum demand	1.5

Daily Residential Load Curves



Yearly Residential Load Curves



The Home with Complete Service Will Need Fifteen to Twenty Times the Present Average Consumption